AUGUST, 1961

TRAFFIC ENGINEERING

WORLD TRAFFIC ENGINEERING CONFERENCE

31st Annual Meeting
Institute of Traffic Engineers and
International Sessions in Traffic Engineering
August 21-26, 1961 *Washington, D. C.*

SIX YEARS OF LEADERSHIP

THE WORLDS MOST ADVANCED

SNOWFAST LINE

AN INTERNATIONALLY RECOGNIZED PERMANENTLY ANCHORING

COLD PLASTIC LINE

IN TWO ANTISLIPPING STANDARDS

APPLIED AT HIGH SPEEDS BY OUR MACHINES

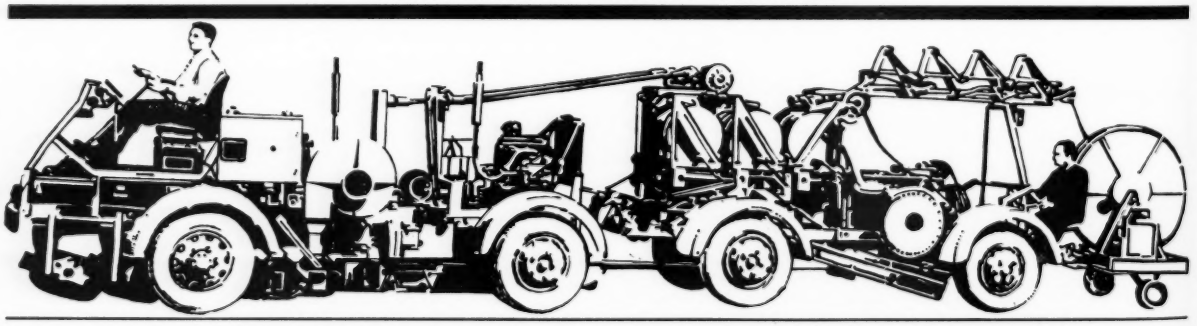
"SNOWFAST MASTER" ON HIGHWAYS

"SNOWFAST JUNIOR" ON URBAN WAYS

"SNOWFAST CROSS" ON PEDESTRIAN CROSSINGS

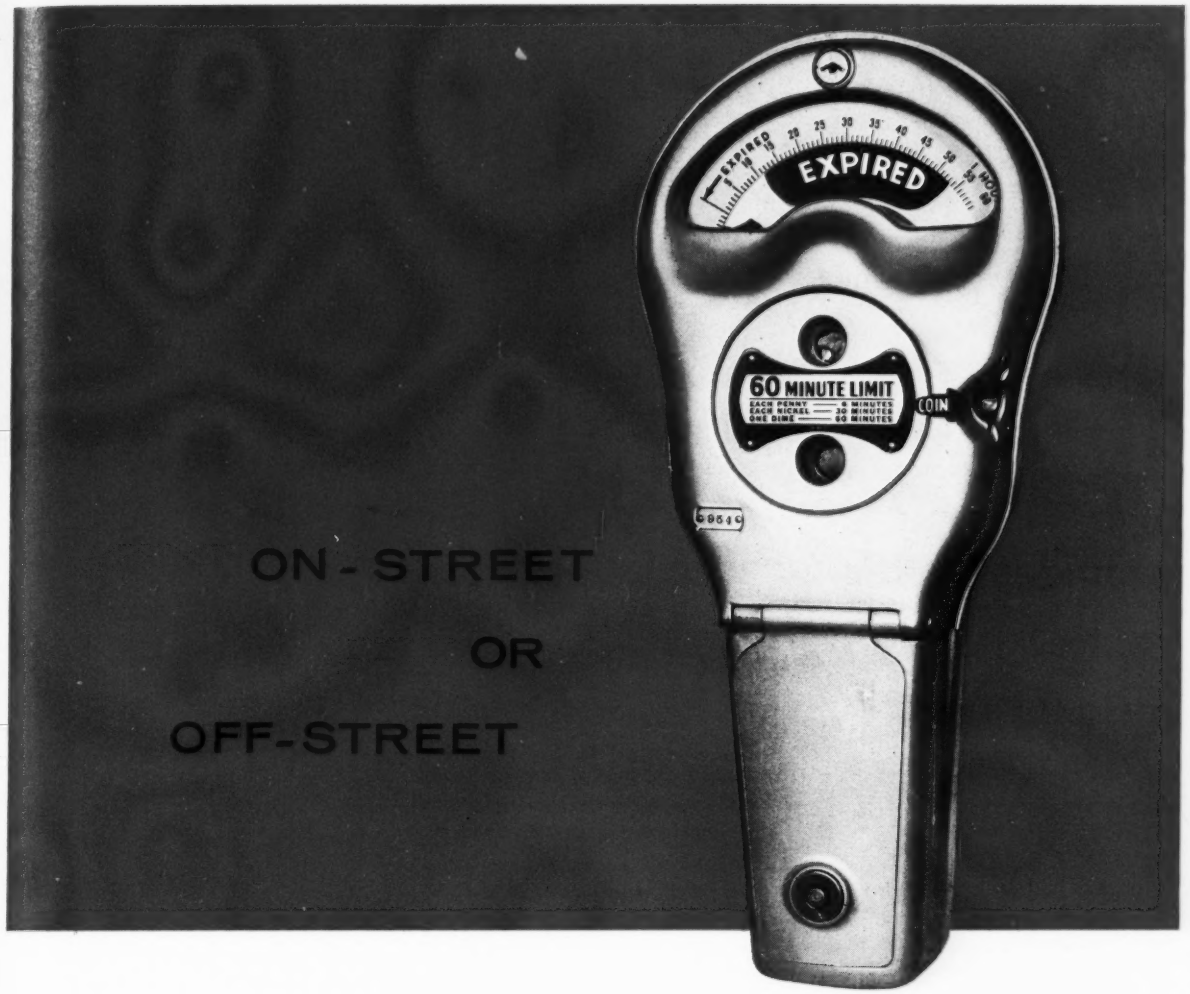
EIGHT U. S. PATENT APPLICATIONS

BROAD CLAIMS ALREADY ALLOWED



SNOWFAST ESTABLISHMENT

POST BOX 34757 - VADUX - LIECHTENSTEIN (EUROPE)



PARK-O-METER PRODUCES PROFIT

Whether your city has on-street or off-street parking problems, Park-O-Meter can be utilized to produce profits.

Park-O-Meters are automatic and accurate. They can be adjusted *on the site* for time, rate and coin changes, thereby eliminating costly shop maintenance and overhead.

Park-O-Meter parts are precisely engineered and skillfully built of finest quality brass, copper and stainless steel. They pay for themselves quickly and continuously. Let a Park-O-Meter parking expert show you how you can have a profitable parking meter system.

MAGEE-HALE PARK-O-METER COMPANY

3909 Willow Springs Road • Oklahoma City, Oklahoma

CLIP THIS COUPON

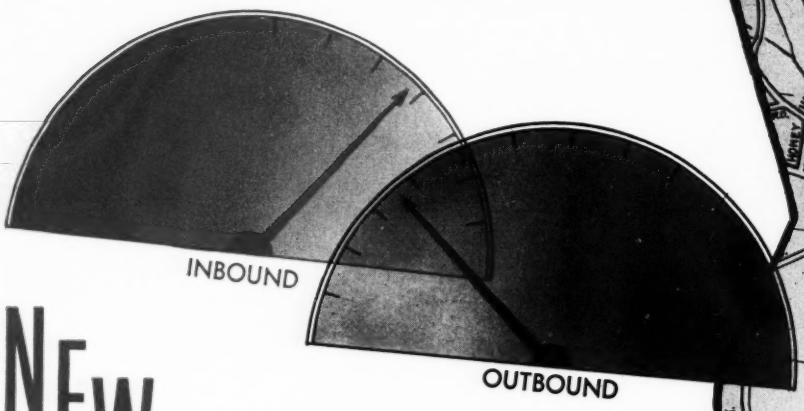
_____I would like to have more information.

_____Please have a Park-O-Meter representative call.

Name_____Title_____

City _____

State _____



NEW TM SYSTEM

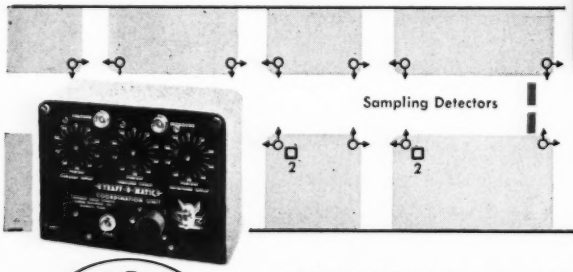
provides traffic-actuated signal control for arterial flow . . . automatically . . . for less money

The TRAFF-O-MATIC® TM SYSTEM is a traffic-actuated, 3-offset, 3-cycle length system that provides a low cost method of arterial signal control. It responds to *actual* traffic changes *without time clocks . . . . . without program drums.*

Continuously and automatically the TM System seeks and selects the most favorable offset and cycle length combination based on the relative volume levels of two sampled directions of traffic flow. Operating adjustments are made without tools. Circuitry and component construction incorporate the latest design techniques for maximum service and ease of maintenance.

1 ■ TRAFF-O-MATIC MASTER MODEL TM-1 maintains continuous inbound-outbound volume comparison . . . automatically selects one of three offsets to best serve traffic flow, in addition to free operation at low volumes.

2 □ TRAFF-O-MATIC COORDINATING UNIT MODEL TM-21, one with each local semi-actuated controller, interprets Master's offset instructions . . . easy knob adjustment of three offsets . . . each offset can be assigned an individual background cycle length.



WRITE TODAY FOR DETAILS

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES, INCORPORATED
NORWALK, CONNECTICUT

ELECTRO-MATIC® CONTROL
TRAFFIC ACTUATED

TRAFFIC ENGINEERING

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

Vol. 31 AUGUST, 1961 No. 11

INSTITUTE OFFICERS

A. F. MALO
President

GORDON K. GRAVELLE
Vice-President

ROBERT A. BURCH
Vice-President

J. AL HEAD
Secretary-Treasurer

DIRECTORS

A. L. HUTCHISON
District Number 6

FRED W. HURD
District Number 1

FENTON G. JORDAN
District Number 5

O. K. NORMANN
District Number 2

EVAN E. OLMSTEAD
District Number 4

HERBERT B. WOODLING
District Number 3

EDWARD G. WETZEL
Immediate Past President

PUBLICATION STAFF

DAVID M. BALDWIN
Editor

REBEKAH FRIEBELY
Managing Editor

PHYLLIS WILKINSON
Advertising Manager

G. A. BACCHUS
J. W. CHAMBLISS
C. C. CLARK
WM. E. CORGILL
R. E. DUNN
M. J. HUBER
E. A. MUELLER
C. C. ROBINSON
S. T. SIEGEL
BURT WHEDON
Associate Editors

CONTENTS

FEATURES

Traffic Engineering in the Nation's Capital 11
Francis E. Twiss

Transportation Progress in the Washington Region 16
Robert A. Keith

Pedestrian Crossovers 21
Paul Roer

Simultaneous Interpretation at World Traffic Engineering Conference 23

Global Traffic Woes 24
Richard W. Tupper

TECHNICAL NOTES

World Traffic Engineering Program 26

Let's Do the Simple Things First! 30

NEWS

Coming Events 22
Traffic News 34
New Appointments 40
New Publications 42
New Equipment and Methods 43

INSTITUTE AFFAIRS

Technical Council News 48
Section News 55
Membership Applications 59
Yearbook Changes 59

HIGHWAY RESEARCH BOARD NOTES 55

MISCELLANEOUS

Positions Available 42
Letter to the Editor 52
Participating Organizations 52
Index to Advertisers 62
Professional Service Directory ..... 62 & 63

Cover: The Capitol, Washington, D. C.

TRAFFIC ENGINEERING is published monthly by the Institute of Traffic Engineers. Editorial offices are at 2029 K Street NW, Washington 6, D.C. Advertising plates should be sent to Interstate Printing Corp., 400 Watchung Avenue, Plainfield, N. J. Printed in U.S.A. Second class postage paid at Plainfield, New Jersey. ¶Single copies 50 cents, subscription price $4.50 per year in the United States and Canada; $5.75 per year to foreign countries.

The Institute is not responsible for any statements made or opinions expressed in its publications. Publication of advertising does not constitute Institute approval or endorsement of the products or services advertised. Permission to reprint contents with customary credit line is given unless otherwise stated. The Institute seal, pictured at the upper left on this page, is a Registered Trade Mark of the Institute of Traffic Engineers.

Maintenance Engineered . . .

. . . the extra design features in signals by Traffic Signals, Inc.
save you time and money at every step of installation and maintenance

MAINTENANCE ENGINEERED traffic signals by Traffic Signals, Inc. meet or surpass all I.T.E. requirements. You get the plus of MAINTENANCE ENGINEERING when you specify Traffic Signals, Inc. because of the savings in your budget due to less time and effort required to install, adjust, and maintain these signals.

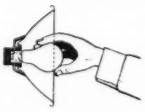
Examine the features below and see for yourself the many built-in "extras" that mean a better traffic signal at less cost than other signals on the market.

. . . ask the man who works on them !

TRI-STUD FITTINGS

Require only small wrench

SPRING-LOK SOCKET



No Tools required

VISOR AND LENS Come-Off
Without removing screws

Small Screwdriver or Spin Wrench

COLOR-CODED WIRING
Spade Terminal Comections

No Tools required

"DZUS" DOOR LATCHES
Positive Cam Action

No Tools required

COMPLETE HOUSINGS,
8" and 12" Easily Combined

Small Wrench required

DOOR AND REFLECTOR
ASSEMBLIES Easily Removed

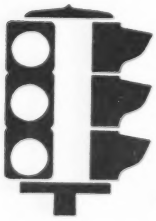
No Tools required

RIGID, CAST ALUMINUM
Mounting Brackets

Small Screwdriver, wrench

Write for TS-101 for information on the M-Series Signals by Traffic Signals, Inc.
M-Series Signals are: **Modern as the 1960's**
Maintenance Engineered

PATENT PENDING



Traffic Signals, inc.

PLATE 606

ADVANCED ENGINEERING IN TRAFFIC SIGNALS AND TRAFFIC SIGNAL CONTROLS

P. O. BOX 1303 • 222 BEACH STREET • SHREVEPORT, LOUISIANA

Frankly Speaking . . .

WE ARE ON THE EVE of the first world traffic engineering conference, scheduled for Washington, D. C. this month. This pioneer event, which reflects the far-reaching impact and concern of modern traffic complexities, will consist of two meetings: the 31st Annual Meeting of the Institute of Traffic Engineers followed by the International Sessions in Traffic Engineering. In addition, the Organization of American States—Pan American Union will conduct an Inter-American Traffic Seminar for traffic specialists from countries of the Americas, timed in conjunction with the conference.

Sponsorship of this world-wide conclave grew out of five International Study Weeks in Traffic Engineering held during the past eight years in the Netherlands, Switzerland, Italy, Denmark and France. The backers of these study weeks joined with the Institute in this ambitious new project.

Although the greater proportion of Institute of Traffic Engineers members is in the United States, it is from without that the largest membership increase during the past five years has occurred. It is a concrete expression of the spreading interest in traffic engineering caused by mounting vehicle registration reported by several nations and the subsequent accidents and congestion problems this has produced.

Significant also is the progress made in the control of traffic in nations abroad. Improved traffic signal systems, signing, pavement markings and other traffic control measures attest to this. A review of the Fifth International Study Week in Traffic Engineering program held in Nice, France last September reveals many evidences of the advancements in the technique of traffic engineering in Europe and other overseas countries. An excellent example of energetic organizations seeking answers to the multiple aspects of the traffic problem is the Road Research Laboratory in England.

At home, certainly the cities and states of America have continued a remarkable campaign during the past decade in the control and movement of traffic. Better control devices, standardization, off-street parking, research, the construction of freeways and now the application of electronics to the control of traffic, have all contributed.

The International sessions with speakers of renown from Europe, Great Britain, Mexico, South America, Canada, Australia, Japan, India and the United States will showcase the varied techniques utilized in the remarkable advancement of the traffic engineering profession in near and distant areas of the globe. With simultaneous translation in four languages, delegates should benefit by this unique interchange of ideas and information from professionals of proven caliber.

We welcome our world visitors to the nation's capital in Washington, D. C., with the conviction and faith that this meeting will contribute significantly to the traffic engineering knowledge of those in attendance. This is truly one world with the miles becoming shorter as technological achievements lengthen our steps. The Institute of Traffic Engineers saw clearly long ago that traffic was not limited to local situations. The improvements in the automobile and its wider application through higher economic standards, and greater flexibility through mushrooming networks of arteries, expanded its use for long distance travel so that traffic control has now become national in scope. It is now evidently time to recognize the traffic factor in our societies as having international horizons . . . and therefore demanding intensified attention by those of us concerned.

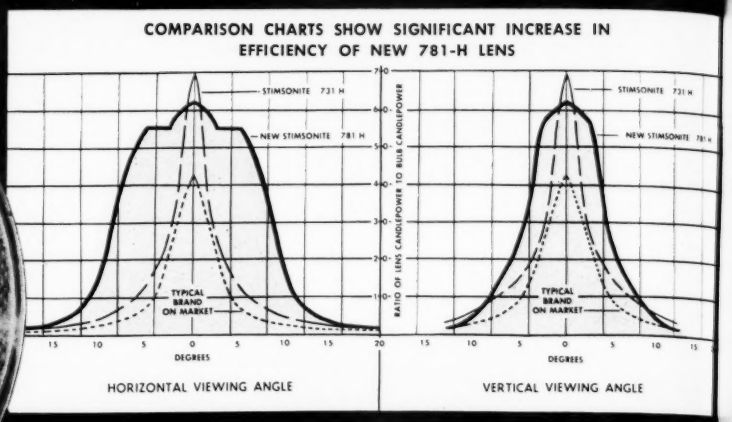
ALGER F. MALO,
President,
Institute of Traffic Engineers

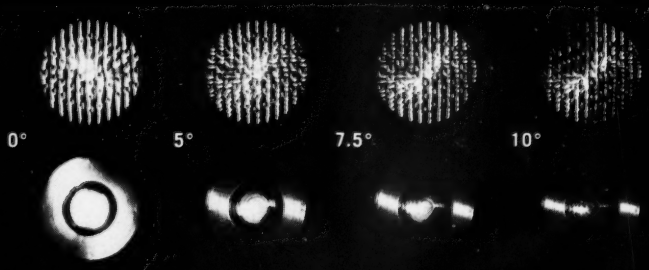
and now . . . STIMSONITE® HAZARD

The Lens that gives FULL ILLUMINATION for FLASHERS and WARNING LIGHTS

(ONE HALF SIZE)

MODEL 781H


COMPARISON CHARTS SHOW SIGNIFICANT INCREASE IN EFFICIENCY OF NEW 781-H LENS
STIMSONITE 731 H
NEW STIMSONITE 781 H
TYPICAL BRAND ON MARKET
RATIO OF LENS CANDLEPOWER TO BULB CANDLEPOWER
DEGREES
HORIZONTAL VIEWING ANGLE
VERTICAL VIEWING ANGLE



COMPARISON — New Stimsonite Hazard Lens (shown on top) and typical radially symmetrical lens as viewed from various angles.

Remarkable new lens system projects a rectangular beam of light

The STIMSONITE HAZARD OPTIC SYSTEM gathers previously wasted (loss) light—packs it —than projects it for full illumination on flashing barricades and other warning devices.

Efficient distribution means increased intensity —thus the HAZARD signal stands out night **and** day. The large uniform signal commands greater attention—is seen at greater distances and from greater angles.

Specify Stimsonite HAZARD for vital safety features:

- Full illumination—high signal intensity . . . largest signal size.
- Improved detection and localization.
- Added ring of reflex for signal maintenance at all times.*
- Fits all standard 7" barricade units.
- Permits saving of battery power . . . longer life and less servicing.

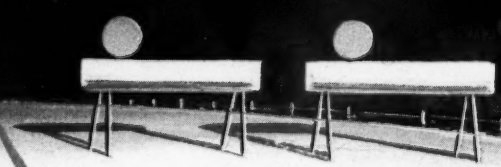
FULL ILLUMINATION with HAZARD MEANS:

No "fire-flies"

No thin "propeller" of light

No loss of signal due to mis-aim

*Also available as an **all optical lens** without ring of reflex.



specifications and detailed engineering study available from —

STIMSONITE DIVISION

Elastic Stop Nut Corporation of America

3445 N. KIMBALL AVENUE, CHICAGO 18, ILLINOIS

EAGLE monotrol® system

saves 60% in wiring costs alone *at Columbus, Ohio*

In the Words of— **Albert G. Giles**, Director of Public Safety, City of Columbus and **John L. Gallagher**, Chief Traffic Engineer, City of Columbus

Eagle "Monotrol" Central Office Master Control Panels

Eagle EF-20 Local Multi-Dial Controllers

"In December, 1960, Columbus, Ohio, completed a comprehensive three-year traffic modernization program. We now have four complete Eagle Monotrol Multi-dial Systems, totaling 298 signalized intersections of the city's 480."

"Each of the four systems is interconnected by Monotrol providing *thirty-one functions over a single pair of wires,* saving us 60% in wiring costs alone, which is, of course, of basic concern to all Municipal purchasing. Further economies will be realized in the future because the extremely flexible system will not require costly, complex replacements and alterations. Although we are using only nine functions at present, many more will be added. Without these available spare functions, future growth of the system would be virtually impossible.

"It is too early to quote statistics on these recently installed systems, but they have definitely speeded up the flow of traffic through our city and we fully expect a concurrent drop in our accident rates.

"The components have not presented any maintenance problems over the three-year installation period, other than routine matters, such as cleaning contacts and lubrication once a year."

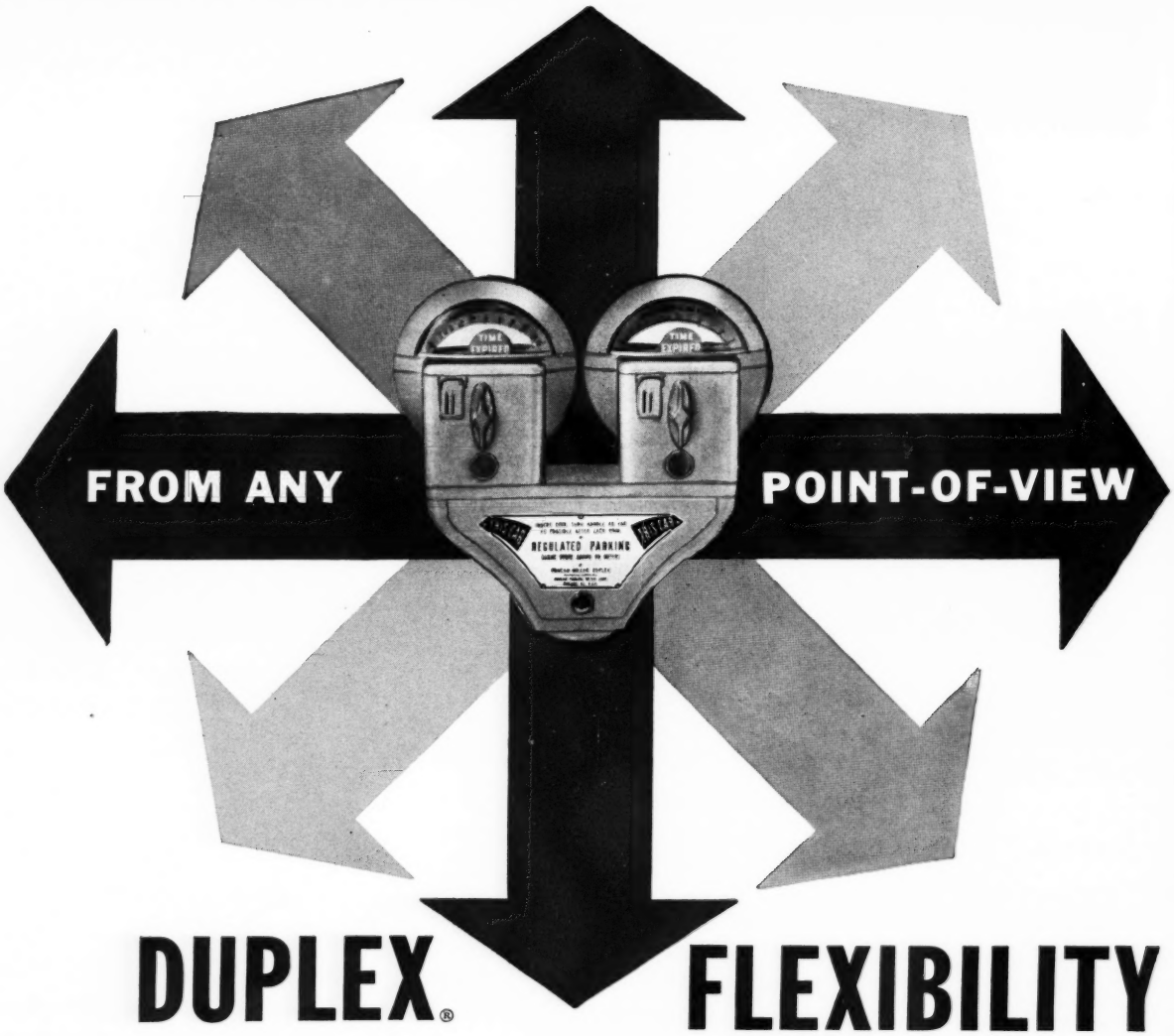
INVESTIGATE AND SPECIFY EAGLE MONOTROL® SYSTEMS for Traffic Control flexibility, expansibility and built-in savings. . at time of installation. .and in the future.

EAGLE SIGNAL COMPANY, Municipal Division
Dept. TE-861, MOLINE, ILLINOIS
Please send me more information on your Monotrol and Multi-dial Controllers as used in Columbus, Ohio installation.

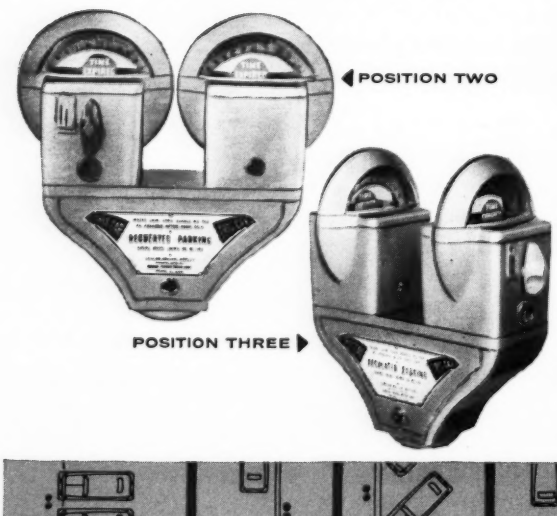
NAME AND TITLE

ORGANIZATION

FULL ADDRESS



DUPLEX® FLEXIBILITY IS UNEQUALLED!



Versatile Duncan Duplex provides proper facing positions for *positive* meter identification regardless of the method of parking.

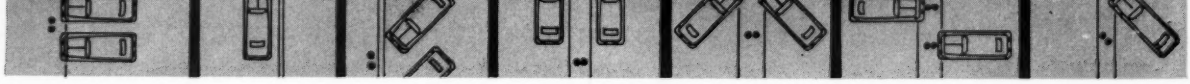
Eliminates motorists *confusion* and loss of good-will prevalent with ordinary double or twin meters.

Available in a wide range of time and rate combinations utilizing pennies, nickels, dimes, quarters and good-will tokens to meet *all* curb and off-street parking requirements.

DUNCAN PARKING METER

Division of NAUTEC Corporation

835 NO. WOOD STREET • CHICAGO 22, ILLINOIS



Traffic Engineering in the Nation's Capital

By Francis E. Twiss
Deputy Director for Traffic Engineering and Operations
Department of Highways and Traffic
Washington, D. C.

HIGHWAY CONSTRUCTION in Washington, D. C. has grown by leaps and bounds over the past few years—from an average of $6,000,000. a year to about $35,000,000. during the fiscal year of 1961. It will probably be about $68,000,000. in fiscal 1962 and reach a maximum of $70,000,000. to $80,000,000. in 1963. This tremendous change has been necessary to keep pace with the growing demands in the metropolitan area and is likely to continue for many years.

Even the introduction of a rapid transit system in the next few years under the guidance of the newly organized National Capital Transportation Agency will not greatly affect this program. Rather it will supplement the needs for additional and more efficient local transportation.

This sudden upward surge in highway construction activity, with the concurrent requirement to integrate the operating responsibility, made it necessary in 1958 to move traffic engineering from the Department of Motor Vehicles to the Highway Department.

The District of Columbia had one of the first traffic engineering organizations in the country. It was established by an act of Congress in 1925 as part of the Department of Vehicles and Traffic. This department had the dual function of administering motor vehicle and driver licensing, as well as the engineering of traffic safety on the city streets. At that time it was charged with "the making of traffic studies and plans, the installation and maintenance of traffic signs, signals and markers, and of such other matters as may be determined by the Commissioners."

During the twenty-eight year period between 1925 and 1953, the Department of Vehicles and Traffic had only three directors. In 1953 a reorganization act separated the field operation

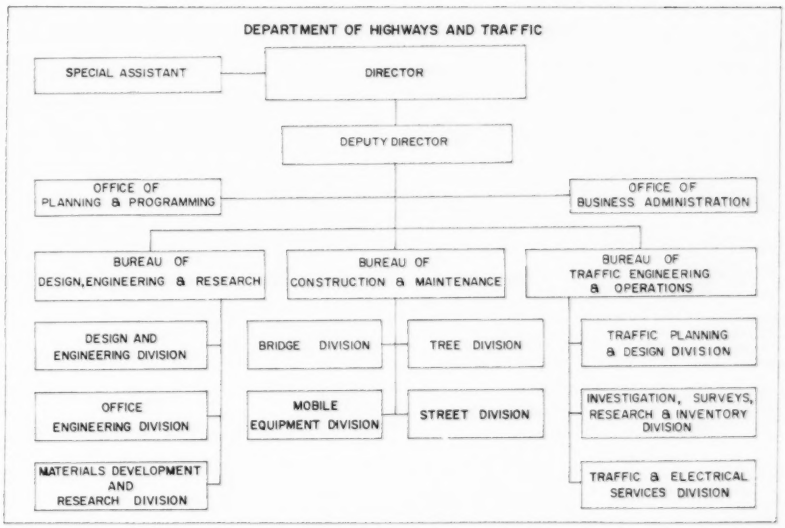


Figure 1

section from the engineering section by sending the former to the Department of Highways to operate under the electrical engineer. (The Electrical Division at that time made and installed street name signs as well as supervised the installation of traffic signals.) This change was made in an attempt to effect efficiency in Government and save the District money by combining work functions and not particularly to better traffic engineering operations. Whether this was effected or not is something which never can be proved. However, on the basis of what we know about other city traffic engineering operations, it is questionable.

As a matter of fact during the ensuing five or six years there was a considerable amount of bickering back and forth between the two departments and, understandably, a fair amount of lost motion resulted because two parts of the same operation were under different heads.

With the untimely death in 1958 of the able administrator of the Department of Vehicles and Traffic, George E. Keneipp, the Commissioners (at the suggestion of John N. Robertson, Director of the Department of Highways) requested the Automotive Safety Foundation to make an overall study of the Highway Department, as well as the Department of Motor Vehicles, and recommend a reorganization which would be better able to cope with the new problems confronting highway transportation in the District. This study was completed in the summer of 1958. They recommended a reorganization of the Department and a transferral of traffic engineering to the Highway Department as a separate Bureau as shown in Figure 1. This report was approved by the Commissioners and the Department of Highways and Traffic was established. The Department of Motor Vehicles remained as a separate agency, charged with the licensing of operators and ve-

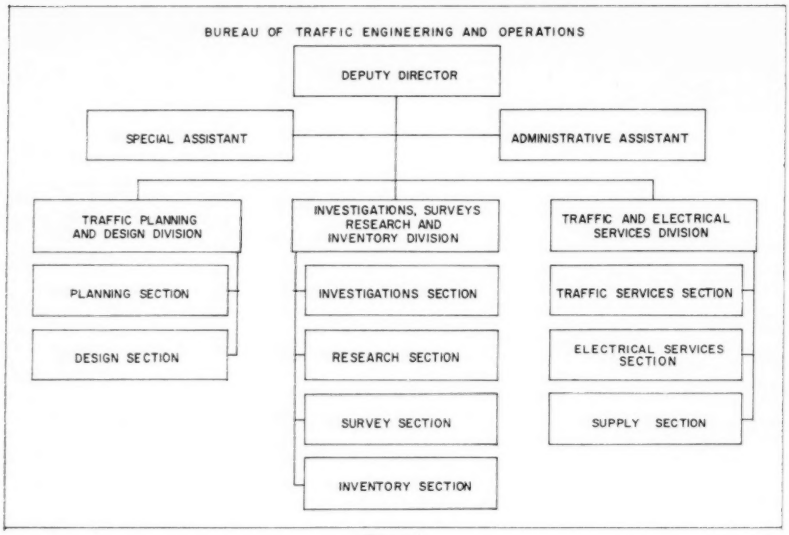


Figure 2

hicles and driver education. These changes are generally in accord with the manner in which similar functions are handled in most of the 50 states.

Shortly after this reorganization, Mr. Robertson retired due to ill health. Harold L. Aitken was appointed Director in March of 1959. Approximately one month later the writer accepted the position as Deputy Director for this new Bureau of the Highway Department.

It was recognized, under this reorganization, that traffic engineering was going to be able to contribute in a major way to the work of the Highway Department by recommending measures for safer and more efficient operation of existing highways and streets of the District. It could work more closely with the Office of Program and Planning and the other bureaus to bring about a better balanced and improved highway transportation system.

In order to better adapt traffic engineering to its new responsibilities, the Automotive Safety Foundation was requested to expand their initial study by developing an organizational chart for the new Bureau of Traffic Engineering and Operations. This was completed in the early summer of 1959 and new personnel were employed in accordance with the recommendations of the Foundation. It is noteworthy to add that relatively few, and only minor, changes in this plan have been made over the ensuing two years. This is a credit to the soundness of the reorganization plan and to the fact that the Foundation worked closely with people in the Department to develop a working program.

The new Bureau has three divisions: Planning and Design; Investigations, Surveys, Research and Inventory; and Traffic and Electrical Services, as indicated in Figure 2. This arrangement made it possible for planners and designers to concentrate on their particular aspect of traffic engineering, leaving the investigation, surveys, etc. to a separate division. This latter division has proven to be an effective and useful adjunct to the Traffic Engineering Bureau. It is still developing procedures and training personnel. It is hoped ultimately that this section will be one of the most important sections of the Department of Highways and Traffic. It is to this group that all complaints and citizens' suggestions are routed for investigation and the drafting of reports and responsive letters.

The Bureau at the present time employs 283 people. This includes 33 engineers and technicians in Traffic Planning and Design; 33 engineers and technicians in Investigations, Surveys, Research and Inventory; and 177 positions in the Traffic and Electrical Services Division. The potential of the present staff is second to none. It represents the best available technical training; state and city experience; construction, design, planning and operational backgrounds; and modern administrative techniques.

The District of Columbia as a result of this reorganization is today using and applying the newest methods and materials in the handling of traffic. The Research Section is making a major contribution toward developing new techniques and testing new materials. At the same time the Planning and Design Section is being provided an opportunity to work more closely with other segments of the D. C. Government so that traffic engineering can make its rightful contribution to the problems confronting the District Government.

Because it is the National Capital, Washington is the headquarters of many agencies whose work is related to traffic engineering. During the past two years we have increasingly made use of the talent and facilities of these organizations. Short count procedures, research techniques, surveillance methods, new control devices and traffic measuring equipment, all are being developed and refined with the informal assistance of mathematicians, engineers, planners, scientists, and administrators living and working in the area. No possibility for improvement is overlooked. We use helicopters, placement tapes, automatic tape and pen recorder; polaroid, still and movie camera techniques, simulation and many other approaches to supplement the classical origin and destination studies, speed and delay studies, speed checks and manual counts.

It is essential that the Department of Highways and Traffic, the National Capital Transportation Agency, the Committee on Downtown Progress, the National Capital Planning Commission, etc., work together, and quickly, to develop a transportation system which will meet the needs of a growing metropolitan area of two million people. It is expected to grow to three million by 1980. Whereas the metropolitan area is expanding, the population within the boundaries of the District of Columbia is decreasing. This means that two things are necessary: (1) an adequate system must be developed to move Government employees from their homes in the suburbs to their place of employment in the District; and (2) land in the District must be redeveloped to provide housing for more people.

Since the major industry in Washington is government, and the largest group of employees are under the control of one employer, it was possible during World War II to develop a staggered hours program. The District Government starts work at 8:15 a.m. and releases employees at 4:45 p.m.; the Pentagon has its own staggered hour system which starts at intervals

between 7 and 9:30 a.m.; The Department of Agriculture starts at 9:00 a.m. and completes work at 5:30 p.m., etc. This program has continued and has been expanded since then. Without this program the problem of peak hour traffic volumes would have been insurmountable years ago.

We do have traffic tie-ups in Washington because the streets are operating at or near capacity, but we believe that traffic moves well—considering the complexity of the street system, laid out by the French architect, L'Enfant, back in the early 1800s. What to him was a wonderful idea, at the time, is today one of our traffic nightmares—diagonal streets converging on circles. This traffic pattern has made it practically impossible to adopt a signal system that will do a satisfactory job.

Two years ago Congress approved the first appropriation for the beginning of an improved system within the District. With this the Department has purchased and installed to date approximately 226 decoders on traffic signal controllers. One hundred eighty-six are operated by radio and approximately 40 decoders are operated from the existing wire system.

These decoders have made it possible to tie in all the outlying isolated locations and systems to a new master controller installed at the Bureau's maintenance headquarters in southeast Washington. The District has approximately 600 intersections in the downtown area which were originally interconnected by wire. An additional 300 intersections existed in outlying areas which operated independently. The use of radio has made it possible to provide progressive movement on major arterials from downtown to the District Line. We are working on a plan at the present time to bring the surrounding communities into this same system so that progression will not stop at our boundaries.

Our radio system "brain" consists of a control station in Southeast Washington and a duplicate station in the Municipal Center which operates concurrently with the master controller. In case of failure the duplicate station will be ready to cut in at a flick of a switch.

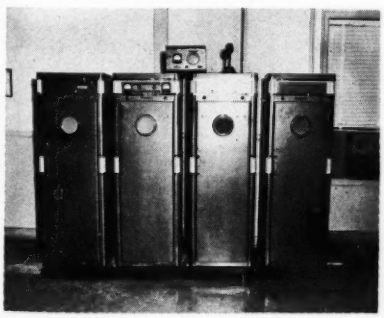


Figure 3

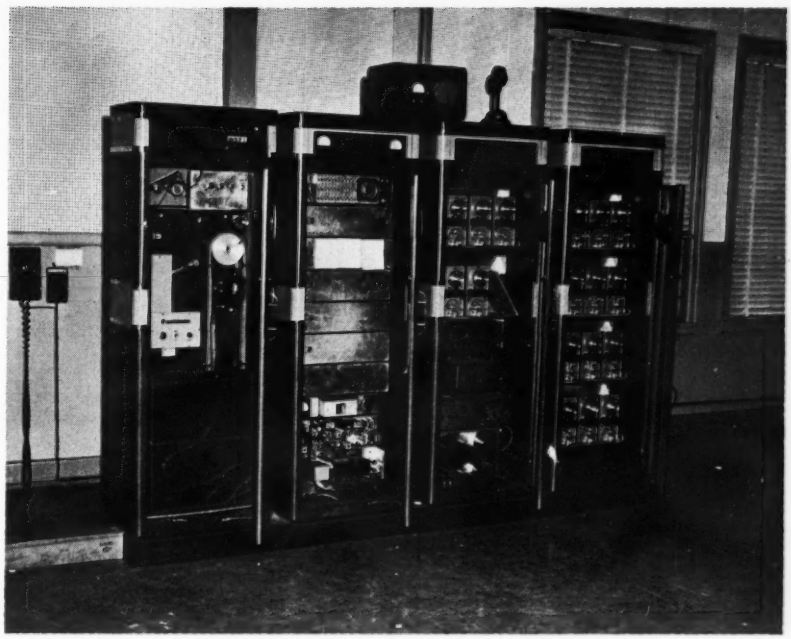


Figure 4

In this central control station a program for a week is developed and the specific functions to be performed by the signals are coded and punched onto a special tape. This tape is operated by a master clock and runs through a programmer which in turn actuates equipment, transmitting coded tones to all intersections equipped with radio. Each intersection will respond to just one particular code. Once it responds, additional tones operate switches turning the signal on or off, or switching the timer to any one of the three dials in the controller. Figures 3 and 4 show the punch tape programmer, the tone generating coder, and the master dial synchronization devices with cabinet doors closed and open. Figure 5 shows a schematic diagram of the radio control system and

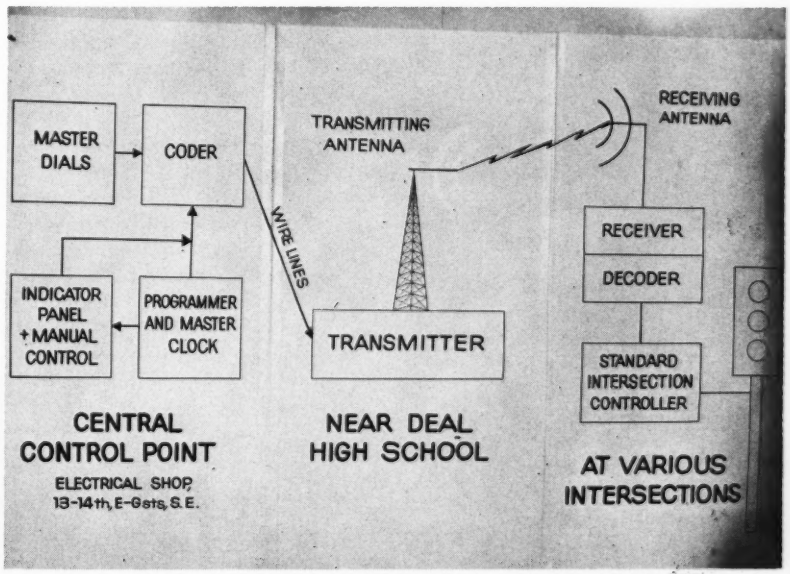


Figure 5

Figure 6

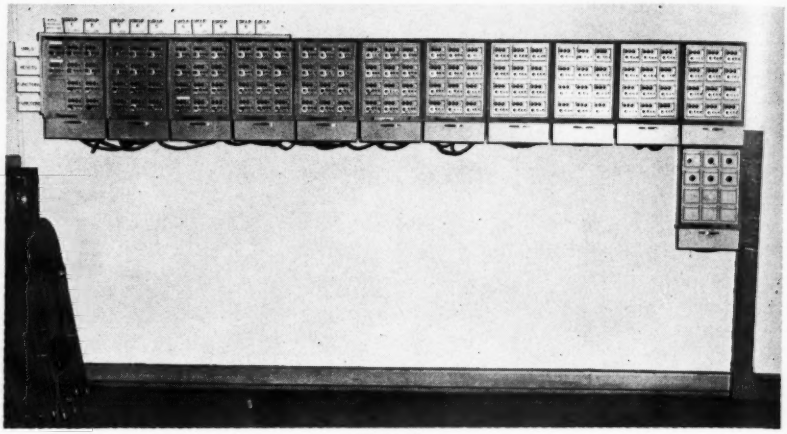


Figure 8
Indicator and Manual Control Panel

how the various components operate. Figures 6 and 7 illustrate a typical installation in the field.

Radio control of our signal system is only one of many recent innovations made in traffic handling over the past few years. It has long been recognized that pavement markings are one of the most valuable tools of a traffic engineer. We have been experimenting with plastic marking for many years and last summer started a program using thermoplastic. If this material continues to perform as expected we hope to have effective markings available all winter long.

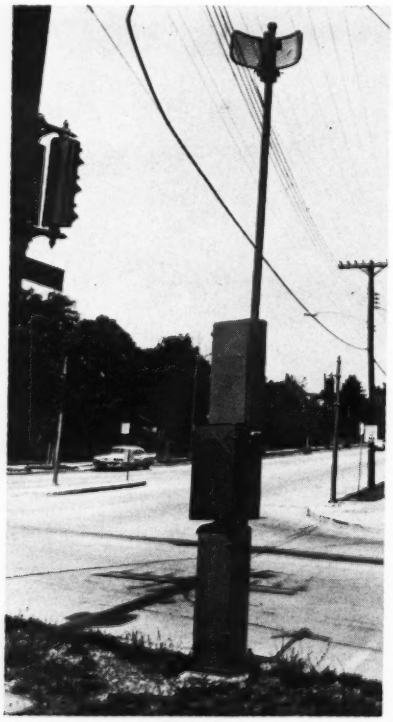


Figure 7

Recently, in cooperation with one paint manufacturer, we undertook a test installation of heated paint. If this product is finally proved successful we look forward to elimination of one of the big headaches of placing pavement markings in urban areas—*drying time*. Vital traffic lanes and intersections are often tied up for hours, whereas if we could use a heated paint, drying time could be cut to a few minutes, thus requiring practically no protection of the line with cones.

An installation of new parking meters was made this spring on the pattern shown in Figure 9. We understand that where this has been used a great improvement in the facility of parking has been experienced. The adjoining community, Montgomery County, started using this method a year ago and reports good results. The advantage to drivers in having a 28 foot space available to either back into or drive directly into should make a tremendous difference in the amount of interference with moving vehicles in adjoining lanes and in the frayed nerves of drivers.

The District of Columbia was one of the first cities to use the "All Walk" system at intersections. The first system was put into operation at Dupont Circle back in 1929. It was not removed or replaced until 1950 when the Dupont Circle Underpass was built. Subsequently the "All Walk" phase in traffic signal control has been installed at ten downtown intersections. We are continuing to use them at locations where vehicular and pedestrian movement reach a saturation point where ordinary controls will not handle the situation. We are currently planning to install such a system at the intersection of Connecticut Avenue and K Streets. The recent development of major office buildings in this area has increased the pedestrian concentration to a point where neither pedestrians nor vehicles can move safely and efficiently without this special phase.

We have found that one of the major bottlenecks on our major arterial streets during both peak and off-peak hours are left turns. During the past two years we have eliminated more than 70 such turns thereby freeing one full lane for moving traffic. It is believed that much more of this can be done in the future. Prohibition of parking, coupled with forced right and/or left turn lanes, and an increasingly more responsive signal control system will greatly increase the capacity on our arterial streets to handle peak hour flows until such time as adequate freeways can be built around and through the metropolitan area.

Unbalanced lane operation was introduced on 16th Street last year and resulted in reducing driving time one-third between Silver Spring and downtown offices. Connecticut Avenue has been unbalanced for 20 years and was extended several blocks recently.

Reversible one-way streets are making a very significant contribution to the ability of our present street system to carry the heavy peak hour flows. Thirteenth Street was operated in this manner starting in 1935. Volumes in excess of 2200 vehicles per hour per lane have been counted on this street even though there are traffic signals on many of the cross streets. This has been one of the highest volumes recorded, including freeways, during the past ten years.

The District has been one of the last

strongholds for trolley operations. Current plans call for elimination of all fixed rail lines by June of 1962. The adandonment of streetcars and the elimination of loading platforms has been one of the greatest boons to more efficient traffic movement since the development of one-way streets. Hopefully, with the removal of the last streetcar, several additional one-way street combinations can be considered. The usual opposition to such streets has been encountered, but it is the plan of the Department to move aggressively towards more of them in the years to come.

In conclusion, it is believed that traffic engineering has been able to materially alleviate congestion on District streets with very little help from freeways. The multiplicity of local and Federal agencies affecting its operations makes it seem at times that little progress is being made. However, in spite of pressures in many directions it has been possible to make some progress.

We believe that continued accumulation of facts and their presentation to the public will make it possible for traffic engineering in the District of Columbia to make a significant contribution to transportation in this area over the next decade while major construction projects are under way. We have already been able to alleviate many difficult congestion problems and anticipate being able to do more, providing we are given the opportunity to use modern techniques to the maximum advantage.

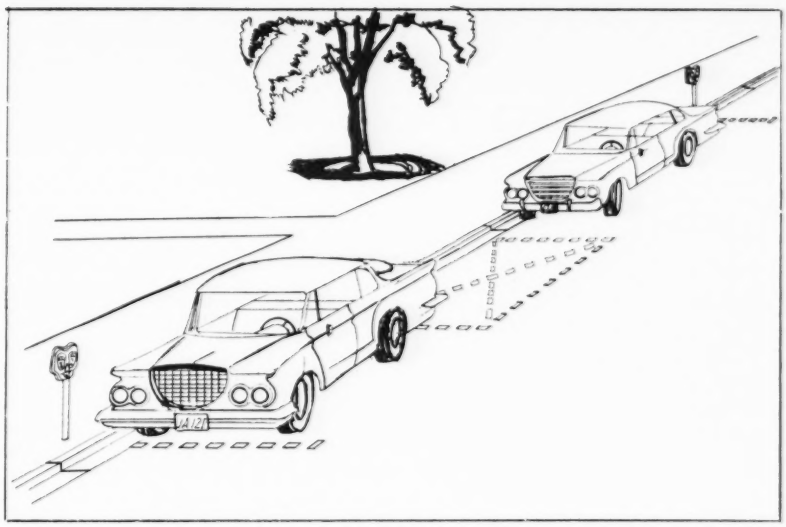


Figure 9

If medical science continues to find ways to prolong life, some of us may actually pay off our mortgages on our homes.

THE TRAFICOUNTER, JR.

is a simple, sturdy, time-tested device for traffic counting. It is pneumatically actuated by means of the road tube attachment.

Traffic volume is easily read on direct reading counter. Can be rapidly installed anywhere. Rugged construction; will last for years.

Write for illustrated Bulletin.

TORONTO 18, ONTARIO E. A. HORTON SALES CO., 299 BERING AVENUE

THE STANDARD OF ACCURACY SINCE 1888

STREETER-AMET COMPANY

GRAYSLAKE • ILLINOIS

Branches in Detroit, Pittsburgh, Allentown, Birmingham and Buffalo

Transportation Progress in the Washington Region

By Robert A. Keith
Chief, Division of Engineering Programs
National Capital Transportation Agency
Washington, D. C.

THE CITY of Washington, D. C. is the heart of a 2000 square mile area known as the National Capital Region. The 300 square mile urban portion of the region is one of the fastest growing and wealthiest metropolitan areas in the nation.

The population is now well over two million persons. Not so long ago it was a relatively small central city with quiet residential areas and a few small centers of commercial activity dispersed through occasional suburban residential areas. Ten years ago the best estimates were that the area would not reach two million population until 1980. So Washington, like many other cities, was caught short in many ways by the recent urban explosion.

While the area has a long way to go to overcome past needs and to account for present growth needs, there is reason for considerable optimism in terms of transportation facilities as well as government operations in general. The highway agencies are working rapidly to overcome the almost complete lack of a freeway system, and extensive detours, particularly in the District of Columbia, are about to become the normal way of life for the next several years.

The four separate transit regulatory agencies of two states and the Federal District of Columbia have been combined into a single regulatory body. And a new Federal transportation agency for the Washington region has been created by the Congress as a step toward coordinating all transportation development efforts and as a step toward building a new express transit system.

Another development of importance is the creation of the Washington Metropolitan Regional Conference, a general purpose organization whose members are the political leaders of the region. Its aim is to promote voluntary cooperative action in solving metropolitan problems. Its Transportation Committee meets monthly with the top staff of area transportation and planning agencies to discuss their programs and trade views.

The National Capital Region

The visitor's view of the region is usually confined to a small part of the original city laid out by Major Pierre L'Enfant. In many cases the view is restricted to not much more than the Mall with the Capitol at the east end, the Washington Monument in the middle, the Lincoln Memorial at the west end, and the White House nearby on the north.

While this small area is the original reason for the City of Washington, it has taken on a secondary role in the life of the typical local citizen. In a similar sense, the former all-Federal city is no more: the non-Federal workers far outnumber the Federal workers. While the Federal worker is the basic reason for most of the region's activities, he now represents just over one-third of the employment.

The District of Columbia now contains somewhat less than one-third of the area population. Virginia, Maryland, and the District have about one-third each.

Nevertheless, downtown Washington continues to play an exceptionally important role in the region's activities. Few other large metropolitan areas have such a large proportion of employment in their downtown areas. Approximately 325,000 jobs—nearly 40 per cent of the regional total—are downtown. Downtown office building construction is presently greater than in almost any other city in the country.

This large concentration of jobs is one of the major determinants of the type of transportation needed. But there are also two other factors.

Despite large numbers of downtown workers, the densities of employment are not very high. There are no office buildings over 12 or 13 floors. There are many open spaces for parks and wide streets and avenues. Downtown Washington was developed, as a matter of policy, as a dignified, uncongested, extensive but small-scale central area. Today this would be called an automobile-oriented policy of development.

The other factor largely influencing transportation needs is the low density residential area so common to the region. The suburbs, and some parts of the city itself, consist of single family homes on large lots just as in many other new suburban areas across the country.

Washington's population has been extremely automobile conscious since the 1920's. Early statistics show the city with an unusually high ratio of automobiles to population—high for an eastern city—ever since that period. As a result the area's growth has favored maximum use of the automobile in a pattern now referred to generally as sprawl.

The problem before the region is how to cope with the unsatisfied travel pressures created by past and present land and public facility developments. It is also the problem of how to plan for a region that has a near future population target of 3 million people, and a year 2000 target of at least 5 million people.

The first answer came in a report from the National Capital Planning Commission and Regional Planning Council in 1959 after a 4-year comprehensive transportation survey. The answer: an improved freeway system, a new express transit system, and a

new regional agency to organize transportation development and financing.

The regional community's reaction to the report was so favorable, and the follow-up work of a joint congressional committee so well done, that the Congress, returning to Washington in 1960, created the National Capital Transportation Agency. The NCTA was given very broad instructions to develop an express transit program and, in so doing, coordinate and unify all transportation facilities with other public facilities and with land use development.

The Agency did not acquire any responsibilities or powers of the highway agencies or the rights of railroad and transit organizations. Generally speaking the NCTA is expected to augment highway planning, and to establish a detailed express transit program including suggestions on a financing plan that can be undertaken by the area governments.

Present Programs

Like many other metropolises, Washington is in the midst of a giant build-up in its highway construction program largely because of the interstate highway program and the huge amounts of money made available to it through the Federal taxing program. The highway program has also been receiving a considerable boost from 100 per cent Federal projects through the National Capital Parks, the Federal Aviation Agency and the Department of Commerce.

Transit, after many years of being without earnest public support, seems definitely on its way back. Planners and others have calmly been saying that somebody should do something. Others have been saying that it can't be saved and we don't really need it. But all the while transit was quietly maintaining its level of downtown riders. However with downtown booming, it has not been enough to hold level and there will now be positive public support of an effective transit system.

Highways

The highways are not adequate for today's metropolitan area. There are more than 100 miles of freeways and express parkways open to traffic in the 2000 square mile region, but the mileage figure is misleading because there is not yet any semblance of a network for continuous urban freeway travel.

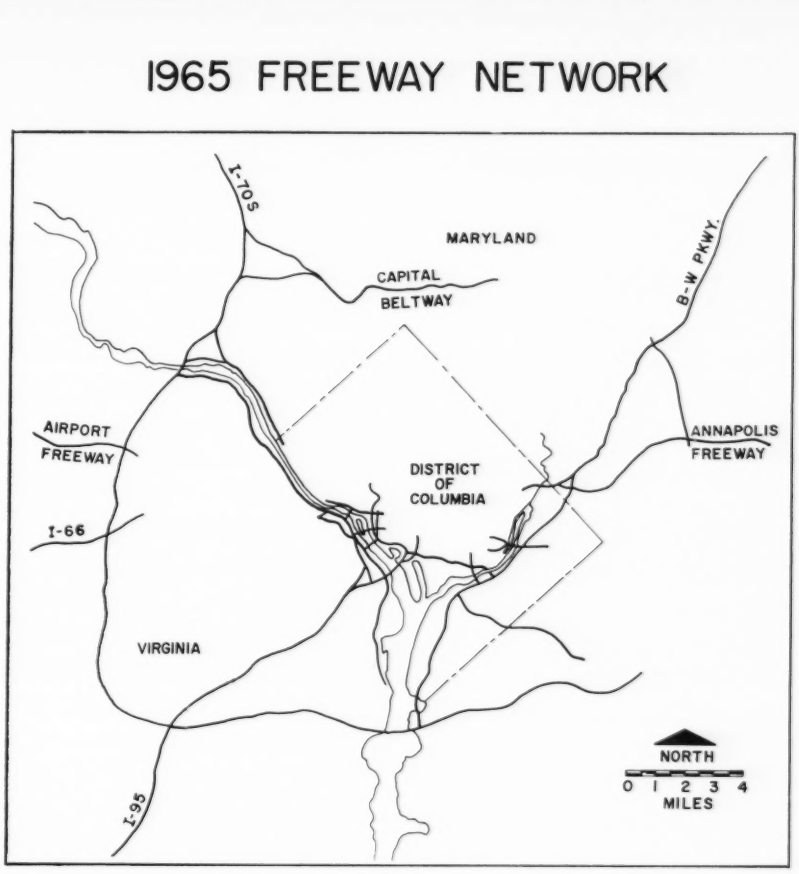


Figure 1
Freeways and express parkways expected to be open to traffic in 1965. Arterial connections would temporarily fill most gaps in the network.

Because of the recent highway legislation which increases Federal funds substantially, there is every reason to believe that by 1965 some portions of the area will have an excellent freeway network available. The map shows the expected 1965 freeway and express parkway network.

The region has had a spending program in the vicinity of $75 million dollars a year for the past two years. Most of the effort has gone into the outer circumferential, in Maryland and Virginia, and the inner loop in the District. The District of Columbia was spending $25 million. The two states and the several Federal Agencies made up the remainder. The District's spending will now double to $50 million but it is not yet known whether the region's total will change significantly.

Maryland's state-wide share of the national interstate program was drastically reduced as a result of the recently revised interstate cost estimates. The counter balancing effect of the new legislation, as it will affect the Washington portion of the state, has not been determined. Virginia's allocation of funds to various parts of the state are largely determined on a year-to-year basis. Virginia has committed an extraordinarily large proportion of funds in recent years to the circumferential Capital Beltway. Whether this same large share will be assigned to the radial Interstate Route 66 from the west when the Beltway is completed is not yet known.

The 100 per cent Federal projects will be phased out to a large extent in the near future. From the Dulles International Airport some 27 miles from downtown to just inside the Capital Beltway, the Federal Aviation Agency is building a freeway access road that will be completed next year. The Woodrow Wilson Bridge carrying the Beltway over the Potomac from Alexandria, Virginia to Prince George's County, Maryland, authorized as a special Federal project before the interstate program was established, will be open to traffic in September of this year. The National Capital Parks is constructing express parkways on both sides of the Potomac from near downtown westerly to the vicinity of the Beltway, and will com-

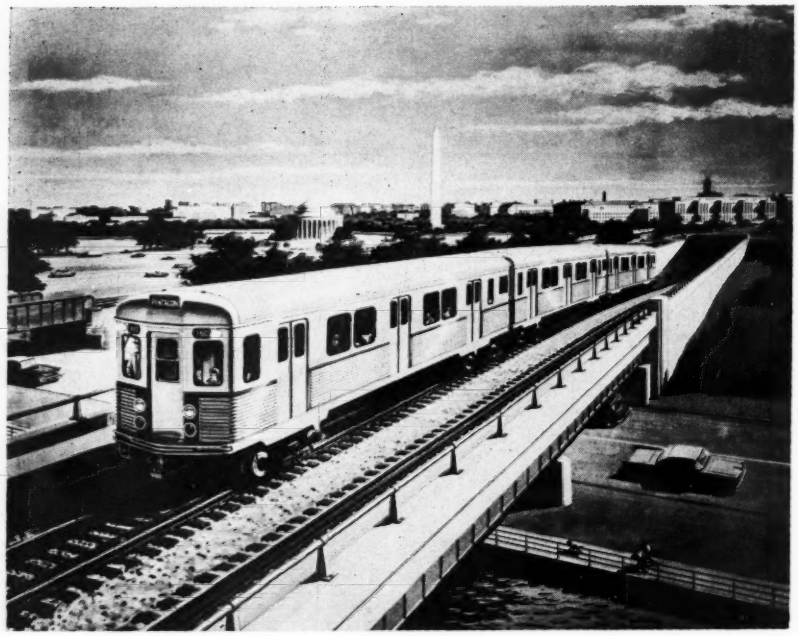


Figure 2
Possible rapid transit train route over Potomac River between downtown and Pentagon.

plete most of this work within one year, except for a yet-to-be appropriated section in the District of Columbia.

It appears that a highway construction figure of from $75 to $100 million per year is a reasonable estimate of expenditures for the next five years. This may well continue for the life of the interstate program. As can be seen by the 1965 freeway system map, it would have to if all parts of the metropolitan community are to receive reasonably equivalent transportation services.

Greater coordination and better timing of projects is a goal of the Washington Metropolitan Regional Conference. Under its auspices, the several agencies involved have recently agreed to meet periodically. By better coordination the area can have more useful and continuous routes of travel available when major construction projects are completed. Eventually it is hoped that better timing of highway construction with sewer, water, and similar public projects, will bring about better timing of land development.

Transit and Railroads

The transit system is clearly inadequate for today's kind of metropolitan area, and commuter railroad service is almost non-existent. Almost all service is by bus on arterials, and other local streets. Service in most suburban areas is infrequent and expensive. Only one-third of the downtown workers travel by transit although in the older core area 50 to 60 per cent of the workers arrive by transit. While an extensive network of railroad lines exist, the downtown Union Station is poorly located. The region has grown up without use of railroad facilities for local person travel. But changes are due in the near future.

Initially these changes may not be as eye-catching or affect as many people as the highway construction program. But if the express transit subway program is requested and authorized on schedule, downtown subway construction will be competing for the public's attention, and for traffic detour routes, with the District of Columbia's program in two to three years.

For the next several years, two new bodies, the Washington Metropolitan Area Transit Commission and the National Capital Transportation Agency will share governmental responsibility for service improvements. The service is provided entirely by private firms.

The Area Transit Commission was established in 1960 by the nation's first interstate compact for utility regulation. In addition to its minimum regulatory duties of supervising fares and service standards, the Commission intends to take the initiative to improve present operations by achieving better route coordination across jurisdictional boundaries and by having the companies adopt a single or joint fare structure.

The National Capital Transportation Agency will act in two ways to achieve immediate improvements. It will attempt to introduce large-scale commuter railroad service, if studies show such service to be feasible and fruitful, and it will seek ways of introducing significantly different bus service, either on an experimental, demonstration basis or on a more permanent basis. The use of transit streets or transit lanes on streets and freeways is one approach to be considered. It is expected that the Congress will initially provide the funds for the Agency to enter into these projects with the railroad and transit companies.

Washington once had a large number of inter-urban and street railway lines. But more general usefulness of the automobile and private transit management's inability to secure financing for expensive capital improvements spelled the beginning of the end. The construction of the Federal Triangle buildings, as just one example, between Constitution and Pennsylvania Avenues and 15th Street around 1930, eliminated the downtown terminal for a number of rail lines. Neither the Government nor the companies acted to make a suitable substitute.

During the 1930's and 1940's many subway suggestions were made, but none were taken seriously enough to have reached the stage of an engineering study until 1944, and again in 1945. Almost no one really believed Washington would ever become the busy, expanding urban region that it is today. The 1944-45 studies were not adopted, and no more was heard until the 1959 report of the National Capital Planning Commission and Regional Planning Council. For express transit, this report proposed 66 miles of express bus routes using, essentially, freeway lanes, and 33 miles of express train transit, including 14 miles of subway in the District of Columbia.

The National Capital Transportation Agency

Because the National Capital Transportation Agency is new upon the Washington scene and is one of the most significant happenings in the area in recent years, its program and its reasons-for-being are explained here in more detail.

To paraphrase the remarks of a number of local political leaders and community spokesmen, the hope of the region for a better community rests in the hands of the NCTA. This may seem to be somewhat of an overstatement. Some of the older, existing agencies may not always appreciate the remarks. But in speaking of transportation and regional development in general, it is said often enough to be taken seriously.

What this really means is that there is dissatisfaction with the existing situation at the local level and there is a demand that a more rational and orderly community development program be instituted.

Congress created the NCTA one year ago as an instrument of the Federal government because there was a need for action. No other local governmental unit was in a position to exercise immediately the necessary leadership in the Federally-oriented region. The Agency is temporary. One of its assignments is the job of proposing its ultimate successor. Many hope that a local and state regional body, created by interstate compact, will be established to continue programs initiated by the Agency. In this, or some similar way, the people and institutions of the region can operate, and pay for, their own transportation system.

While analyzing various organizational possibilities and then recommending its successor, the Agency will at the same time propose ways of financing the region's transportation program and will attempt to allocate costs equitably among the beneficiaries. In addition to the finance and organization work and making such immediate improvements to the movement of people as are feasible, the Agency has two main assignments.

The NCTA is authorized to conduct studies of all aspects of urban transportation ranging from traffic surveys through comprehensive transportation planning, social and economic analyses, basic urban development research, and research and development of transportation vehicles and equipment.

Transportation planning is probably the single best short phrase to describe this part of the work. But as can be seen from the few items mentioned, it is hoped that it can go beyond traffic engineering and travel forecasting. To the extent that funds are available, it will call upon all sciences that can be mustered. Much more ought to be understood about our urban regions before we fully commit several billion dollars to transportation development. But action will not be delayed on the early phases of the development because of such studies. The early phases must go ahead. Present needs are urgent.

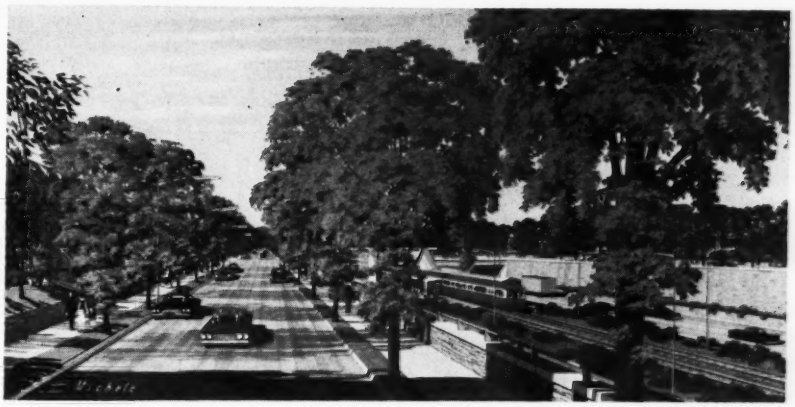


Figure 3
Depressed freeway in typical residential neighborhood of Washington, with median area for rapid transit.

The Agency is, lastly, authorized to prepare what the enabling legislation calls a Transit Development Program. This will show the location and general design of transit routes and the types of equipment to be used. Estimates of capital costs, operating costs and revenues, and system benefits will be made. By law special attention must be given three matters in developing the program: analysis of the possibilities of using portions of existing transit and railroad facilities; development of a downtown subway that would be capable of being extended to the suburbs; and acquisition of transit rights-of-way in connection with express highways now under development, particularly to establish extra-wide medians for transit use and for parking space for transit riders along the future routes.

The finance and organization report, including whatever transit program details as are available at the time the report is prepared, must be given to the President by November 1962. Other Agency activities are on continuing program basis. Final design and the beginning of construction of the first subways will likely take place under the Agency's guidance. Evidence that the Agency is not just a study agency is the fact that money will be sought from Congress this summer for the first part of the land acquisition program.

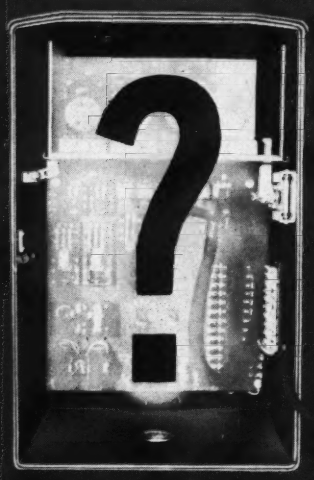
Program Coordination

The National Capital Region has by many standards a rather simplified governmental situation in which to carry out regional programs. There are only about a dozen major jurisdictions ranging from cities through counties to states and the Federal Government. But because the Federal Government is so basic and so dominant in the region, the normal hierarchy of levels of government and decision making does not exist. The Federal Government is by the nature of its role continually exerting its influence at all levels of action and decision making. Whether it be by the Bureau of the Budget, a Congressional appropriations Committee, the National Capital Planning Commission, National Capital Parks, or others, the Federal Government is continually having its effect on what would normally be local decision making.

But the Federal Government is very much aware, particularly in recent years, of its unusual role in the metropolis and its impact on the economic and social life of the communities making up the region. Local negotiations that led to the creation of the NCTA are one of the best examples of that understanding. Local and state people had their views and desires incorporated in the Act in a way that has not been common for local Federal legislation.

This willingness, and necessity, to cooperate has produced an enormous task of coordinating for the NCTA. Coordinating does not mean simply advising others what NCTA intends to do. It means devoting a large part of staff resources to working continually with other groups, so that everyone

MARBELITE'S M-35 SVAP
is a very special
Vehicle and Pedestrian
Semi-Actuated Controller



WHAT makes it special?

HOW does it work?

WHERE is it used?

get the answers, write today-
for complete, newly published manual!
THE MARBELITE CO., INC.
175 NORTH 10th STREET
BROOKLYN 11, N.Y.

understands the purposes and objectives of each part of the plan and so that the local organizations can influence the decisions at the earliest stages of development. Most importantly it means working closely with the Washington Metropolitan Regional Conference and each of the local governing bodies. Their policies and desires must be satisfied.

Table I shows the number of organizations that the NCTA must at least review plans with. It must receive the approval of most, if not all, of them in order that the program succeed. Incorporating local policies is as important as any other consideration in urban transportation planning.

Summary

There has been considerable progress recently in improving the transportation system in the Washington, D. C. region. The future is even brighter. With the express highway program in high gear and excellent prospect for an express transit system soon to complement it, there is hope that the region can encourage its other public and private development to organize itself in a more rational and productive way.

The two million-plus region of today will soon have three million persons. Long range plans must provide for five million in about the year 2000, just 35 or 40 years away. The region's central employment area has an unusually large number of jobs, essentially white-collared, and this permits the decision as to transit needs to be very clear cut: it must have a modern, at-least-as-comfortable-as-your-automobile, express transit system capable of doubling the number of downtown transit riders within 15 years. The question as to the proper level of freeway needs is possibly not as clear cut, but continuation of the construction program to establish some higher and more uniform level of service throughout the region is essential.

Table I
ORGANIZATIONS REQUIRING PLAN REVIEW
BY NATIONAL CAPITAL TRANSPORTATION AGENCY

Federal Government

1. National Capital Planning Commission
2. National Capital Regional Planning Council
3. Bureau of Public Roads, Commerce Department
4. National Capital Parks, Interior Department
5. Fine Arts Commission

State Government

6. Governor of Maryland
7. Governor of Virginia
8. Commissioners of the District of Columbia
9. Maryland State Roads Commission
10. Virginia Department of Highways
11. D. C. Department of Highways and Traffic
12. Maryland National Capital Park and Planning Commission
13. Washington Metropolitan Area Transit Commission

Local Government

14. Washington Metropolitan Regional Conference
15. Montgomery County
16. Prince George's County
17. Arlington County
18. Fairfax County
19. Loudon County
20. Prince William County
21. City of Alexandria
22. City of Falls Church
23. Other cities, towns and special districts as necessary

Other Organizations

24. Four local transit companies
25. Railroad and intercity bus companies
26. Taxi organizations
27. Labor unions.

NOTE: Most of the organizations listed are those with whom plans must be reviewed with by law; a few are by obvious necessity. Many other organizations are consulted from time to time.

Pedestrian Crossovers

By Paul Roer
Traffic Engineering Branch
Ontario Department of Transport

THE PEDESTRIAN CROSSOVER PROGRAM in Metropolitan Toronto is one of the latest attempts to make possible the peaceful co-existence of pedestrians and vehicles.

A description of this program and its apparent effectiveness appeared in the February issue of *Traffic Engineering*.

Does this program offer pedestrians anything that they haven't already got?

As the following analysis shows, pedestrians are not given any advantages. They are in fact given a false sense of security and are therefore at a disadvantage.

If we assume that no motorist will deliberately run down a pedestrian, under what conditions is it "safe" for a pedestrian to cross a stream of traffic?

If the nearest approaching vehicle is closer than its stopping distance it is obviously not safe to walk in front of it.

The vehicular stopping distance is given by:

$$(1) \qquad S = V\vartheta + \frac{V^2}{2a} \quad \text{where}$$

S = stopping distance (ft)
V = vehicle speed (ft/sec)
ϑ = driver reaction-plus brake-lag time (secs)
a = vehicle deceleration (ft/sec)

The distance S is also the minimum distance required between two vehicles in the stream to make it "safe" to cross between them.

S is equal to a time separation:

$$T = \frac{S}{V} = \vartheta + \frac{V}{2a}$$

or a flow headway:

$$(2) \qquad h = T + \frac{L}{V}$$

(L = bumper-bumper length of vehicle (ft.)).

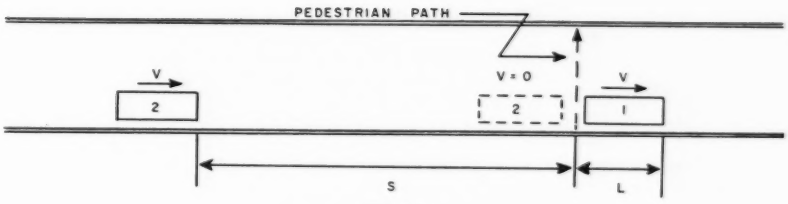


Figure 1
Vehicle Stopping Distance

If we assume:

ϑ = 1.5 secs.

a = 11 ft/sec. (The Ontario Highway Traffic Act permits a minimum of 10.8 ft/sec.)

L = 15 ft.

equations (1) and (2) will give the following values for stopping distances and headways (Figure 2)

At a speed of 30 m.p.h. (44 ft/sec.) a 4 sec. gap in traffic appears to be the minimum for a "safe" crossing.

Figure 3 shows the average number of headways equal to or greater than 4 secs. This table is based on the Poisson frequency distribution.

V		S(Ft.)	h(Secs.)
M.P.H.	Ft./Sec.		
	10	20	3.46
10			
	20	48	3.16
20	30	86	3.36
	40	133	3.70
30			
	50	189	4.07
40	60	254	4.47
	70	327	4.89

Figure 2

Volume Veh./hr	No. of gaps $\geqq$ 4 secs.	Average waiting time between "safe gaps"
3600	65	28 secs.
1800	234	7.7 secs.
1200	312	5.8 secs.
900	324	5.5 secs.

Figure 3
Safe Crossing Gaps

The average waiting time for a "safe" gap represents the average delay to a pedestrian wanting to enter "safely" a stream of traffic.

The traffic volume refers to the near half of the roadway only. The drivers on the far side of the roadway will see the pedestrian crossing and will have ample opportunity to avoid hitting him.

The previous article on the pedestrian crossover program indicated that a pedestrian was delayed, on the average, 3.8 secs. at a crossover. This delay is not significantly smaller than those indicated in Figure 3, obtainable without the benefit of a crossover.

To be able to judge when a "safe" gap in traffic appears the pedestrian must be given the opportunity to observe the traffic. It is of course equally important that the drivers are able to see the pedestrians.

Figure 4 illustrates the conditions at a Pedestrian Crossover on a 4-lane road.

To enable a driver to stop for a pedestrian the distance V must not be less than the vehicular stopping distance. All parking and stopping should therefore be prohibited for a distance X on the approach side of a crossing.

$$X = \frac{8}{8+12} V = .4V$$

By making V equal to S in Figure 2 we get the minimum distance for stopping and parking prohibitions as shown in Figure 5.

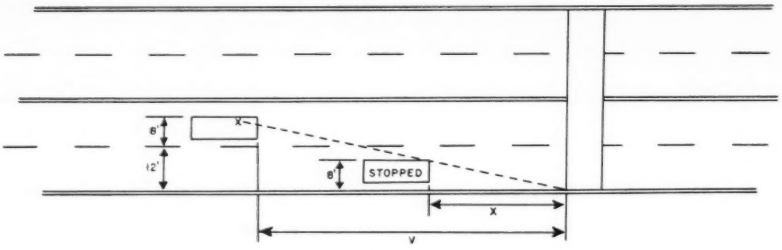


Figure 4
Crossover Sight-Distance

V		
M.P.H.	Ft./Sec.	X (ft)
	10	8
10		
	20	19
20	30	34
	40	53
30		
	50	76
40	60	102
	70	131

Figure 5
Stopping and Parking Prohibition

The previous article indicated that stopping was prohibited for 30' on either side of a crossover.

This is hardly adequate. Figure 5 shows that 75'-100' would be more realistic.

What has been demonstrated here is that the pedestrian crossover basically does not make it easier to cross heavily traveled roads. The delay to pedestrians is roughly the same with and without crossovers.

As both motorists and pedestrians appear uncertain about their rights and duties at crossovers a number of motorists are stopping for pedestrians where a slight reduction in speed is all that is required. On the other hand, the pedestrian has been led to believe that as soon as he raises his hand to point across the street, traffic will stop dead.

Neither of these actions at a pedestrian crossover has any basis in the authorizing by-law. The motorists are not required to stop—only to yield to pedestrians. The pedestrians have no authority to stop vehicular traffic—they must use existing gaps in the traffic stream.

The put the pedestrian crossovers in the proper perspective the public should be told the facts. They should be told that a driver needs warning, time and distance to stop his car. They should be told that pedestrian crossovers, or any other device for that matter, can only give them opportunities to behave safely. They should be told that pedestrian safety rests primarily with the pedestrians.

To make pedestrian crossovers "safer" liberal parking and stopping prohibitions should be applied and enforced.

The signing and marking of crossovers should be kept to a minimum. A motorist can receive no better warning than seeing a pedestrian on the street. Signs to tell the motorist of the crossovers are pointless and distracting. It is the pedestrian he must see and avoid, not the signs and markings.

Coming Events

August 21-26—WORLD TRAFFIC ENGINEERING CONFERENCE—
31st Annual Meeting, Institute of Traffic Engineers and International Sessions in Traffic Engineering, Sheraton-Park Hotel, Washington, D. C. Contact: ITE, 2029 K St. N.W., Washington 6, D. C.

September 4 - 8 — INTER - AMERICAN TRAFFIC SEMINAR—
Pan-American Union, Washington, D. C. Contact: Francisco J. Hernandez, Pan American Union, Washington 6, D. C.

September 24-29—ILLUMINATING ENGINEERING SOCIETY—
Technical Conference, Chase Park Plaza Hotel, St. Louis, Mo. Contact: IES, 1860 Broadway, New York, N. Y.

October 9-13—AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS—
47th Annual Meeting, Denver Hilton Hotel, Denver, Colorado. Contact: AASHO, 917 National Press Bldg., Washington 4, D. C.

October 15-18—AMERICAN TRANSIT ASSOCIATION—
Annual Meeting, Baker and Adolphus Hotels, Dallas, Texas. Contact: ATA, 355 Lexington Avenue, New York 17, N. Y.

October 16-19—NATIONAL SAFETY CONGRESS AND EXHIBITION—
Congress, Conrad Hilton, and other hotels, Chicago, Ill. Contact: NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 16-20—AMERICAN SOCIETY OF CIVIL ENGINEERS—
Annual Convention, Hotel Statler, New York City. Contact: ASCE, 33 West 39th Street, New York 18, N. Y.

November 27-30—SOUTHEASTERN ASSOCIATION OF STATE HIGHWAY OFFICIALS—
Annual Convention, Hotel Marion, Little Rock, Ark. Contact: Raif M. Smith, c/o Arkansas State Highway Dept., Little Rock, Ark. 1962

1962

January 8-12—HIGHWAY RESEARCH BOARD—
Annual Meeting, Sheraton-Park Hotel, Washington, D. C. Contact: HRB, 2101 Constitution Ave., Washington 25, D. C.

March 5-23—TRAFFIC ENGINEERING SEMINAR
Sponsored jointly by Northwestern University and Midwest Section, ITE, at Evanston, Illinois. Tuition $225. Contact: N.U. Traffic Institute, 1804 Hinman Ave., Evanston, Illinois.

SLOW
SCHOOL
Safety-FIRST
SAFE-T-CONE
TRAFFIC GUIDES
Use SAFE-T-CONES wherever traffic is difficult. Proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities.
All-rubber SAFE-T-CONES available in 3 sizes . . .
28-inch
18-inch
12-inch
Solid-color PVC Poly-Cones available in 18-inch and 28-inch sizes.
SLOW
Because of their handling-ease, SAFE-T-CONES are easily adaptable to all situations at a moment's notice. SAFE-T-CONES command attention. All-rubber cones can be painted or reflectorized.
For full information write
RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

Simultaneous Interpretation at World Traffic Engineering Conference

THE WORLD'S MOST exclusive group of specialists—qualified conference interpreters—is being called upon to help make the World Traffic Engineering Conference in Washington, D. C., August 21-26, a memorable event.

A team of these rare performers will be on hand during the international sessions, scheduled for the latter half of the week, to provide simultaneous interpretations of the proceedings in English, French, Spanish and German.

According to one Washington authority on the subject, there are fewer than 200 fully qualified four-language conference interpreters in the world.

"Only scarcely less rare," he said, "than whooping cranes!"

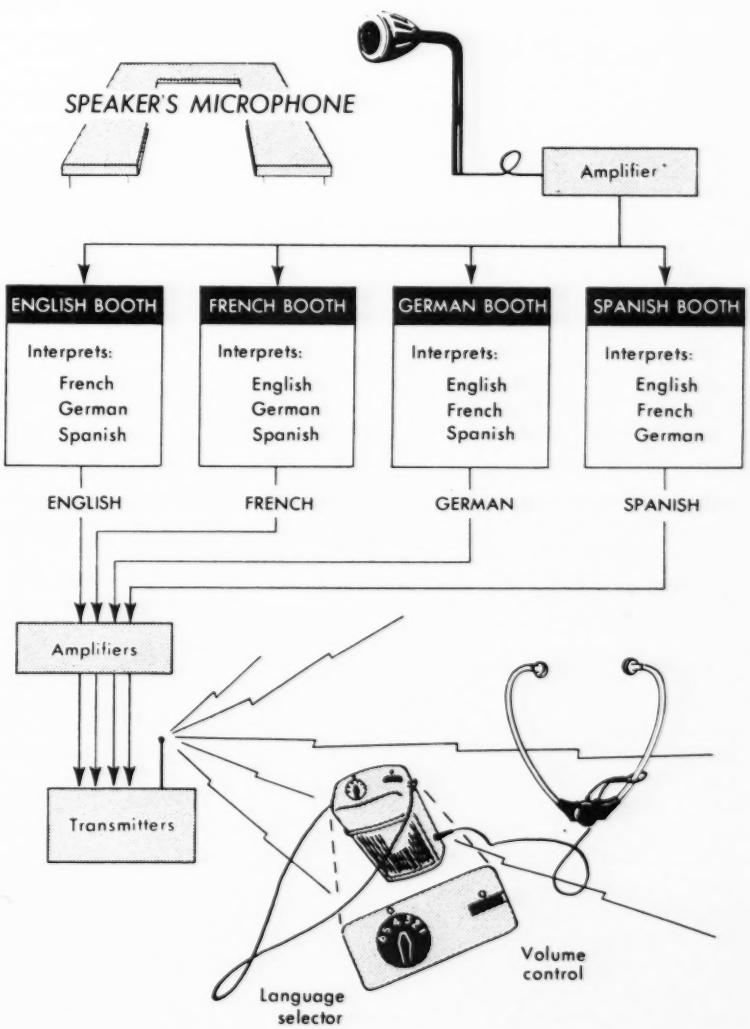
The interpreters who do this work are so skilled in all four languages that sometimes they are able to present clearer and more forceful presentations than the listener would get if he listened to the speaker in the original language.

The international sessions at the World Traffic Engineering Conference are scheduled to be held in the beautiful Conference Suite in the Department of State quarters at 2201 C Street, N. W., where permanent facilities are available for interpreting service. This is the room in which President Kennedy has conducted several televised press conferences in recent months.

Four interpreters' booths will be set up, each connected by wired circuits to the speaker's microphone. The voices of each interpreter involved will be broadcast over a low-power radio system to the audience. Listeners may select the language desired and control the headset volume by dials on a small table radio. Listeners soon become accustomed to the lightweight ear plugs. (See diagram)

Interpreters at the International Sessions will be free-lancers who are often employed by the State Department at important conferences, both in the United States and in other nations. The director of the interpreting crew will be Mrs. Dixon Donnelly. Having handled interpretation at Pan American conferences on traffic and highway engineering, she is familiar with the type of work confronted at the International Sessions.

(Continued on page 25)



Global Traffic Woes

By Richard W. Tupper
American Automobile Association
Washington, D. C.

THE GATHERING OF TRAFFIC EXPERTS from many nations at the World Traffic Engineering Conference in Washington next month reflects the growing need for uniformity in regulation and control brought on by the sharply rising tide of international travel by automobile.

Between the various nations to be represented at the conference, there are wide differences in sign shapes, in road markings, in advance warnings of railroad crossings—to name but a few.

Some of the divergencies have roots in ancient times—such, for example, as the matter of driving on the left or right hand side of the road. In Great Britain, we are told, the left-hand rule resulted from the custom of men on horseback moving to that side of the road to present the sword or pistol to the possibly hostile stranger coming from the other direction. On the Continent, the drivers of carriages, and in America the drivers of Conestoga wagons, rode the left rear horse and so kept to the right to make sure of clearing the vehicle approaching from the opposite direction.

However that may be, the habits and customs of driving practices have become deeply ingrained. Though the reasons for the rules of the road may be totally irrelevant to modern traffic conditions, generations may pass before there is world-wide agreement as to which side of the road one should drive on.

There is great parochialism, too, in the matter of road signs. "The way we do it in our locality is best," seems to be the consensus, "and the rest of the world should conform or not as it likes." Not long after World War II, the United Nations experimented with European-type road signs (using symbols rather than words) in the Middle West of the U. S.

The outcry from America-first groups and super-patriots was both loud and disheartening. Introduction of such foreign signs, it would appear, was as bad as desecrating the American flag, abandoning the Declaration of Independence, and repealing the Constitution.

The experiment soon was abandoned. But the brief trial showed how difficult it is to convert local ideas and habits into patterns required by national and international traffic movements.

This first World Traffic Conference should help dispel two ideas widely held by the American car-riding public. The first is the general supposition that traffic engineering and traffic research are further advanced in the U. S. than anywhere else. The second is the widely-held idea that this country has a sort of monopoly on traffic congestion problems.

The fact is, of course, that many new traffic ideas have originated in other countries. There's the traffic control "funnel" idea from Germany as well as the "traffic pacer" system now being tried out in Michigan which adjusts itself to traffic flow and advises the motorist how to drive in order to make the next green traffic light. Thanks to the United Kingdom's Road Research Laboratory, they know much more about skidding problems overseas than we do here. Highly significant work has gone forward in Germany on driver education and in Sweden on the relationship of alcohol to traffic accidents.

Perhaps the biggest surprise to the average American motorist, inured to sweating it out on journeys to and from his office, is that traffic jams are by no means confined to the United States.

For example, Burton W. Marsh, Director of AAA's Traffic Engineering and Safety Department, was invited by the London *Daily Telegraph* to make a survey of traffic conditions and traffic control operations in Great Britain. After study, in a series of articles he was compelled in the politest terms he could find to tell them that in many respects things were in a terrible mess. "If I were a businessman in central London," he wrote, "I would be screaming about conditions. Your parking has got right out of hand; in fact, in some parts of London one could speak of a state of parking lawlessness . . . I have repeatedly found it virtually impossible as a stranger to pick my way through an urban area."

Late in 1959, under the sponsorship of the International Road Federation, Henry A. Barnes made a special trip through European cities. Mr. Barnes is director of traffic and transit in Baltimore and inventor of the all-vehicle-stop intersection with pedestrians scooting in all directions—popularly known as the "Barnes dance." On return, he reported that traffic in Rome, Paris and London, was an "unbelievable mess." Of Paris traffic conditions, he used the term, "the worst imaginable." Almost no Parisian streets, he said, are marked with paint. Biggest problem in Germany, Mr. Barnes found, was that cities have to go it alone. The federal government builds the autobahns and the states the major highways, leaving the urban centers to their own devices.

Hamburg has a relatively small number of vehicles in relation to its population, but Barnes found there one of the severest traffic crushes he encountered in Europe. In peak hours, he reported, "traffic backs up for blocks and it sometimes takes 45 minutes to go a mile or two."

The congestion in Rome he attri-

buted in large part to undisciplined driving practices. For instance, motorists make U-turns wherever they wish and park or double-park the same way.

In 1959, Leslie J. Williams, a member of the Institute of Traffic Engineers was sent by the U. N. to help improve traffic conditions in Turkey. What he found on arrival was fairly appalling. In Ankara he was struck by "the absence of roadway markings, stop signs, one-way street signs . . . even including street name signs." Road traffic is complicated enough with a mixture of all types of motor vehicles along with donkeys, ox-carts and pedestrians who have a strong preference for walking in the roadway. Compounding the problem is the practice of dashing along the highways with no lights on at night.

"The Turks do a fabulous job of keeping their crates together and moving," Mr. Williams reported, "but they squander what little equipment they have in smash-ups."

Even in glamorous, romantic Tahiti, traffic in the capital city is a genuine headache. An article in the November, 1960, issue of *Holiday* speaks of ". . . the Toonerville buses, jampacked to and including the roof with brown bodies, smiling faces, squealing pigs, and flapping fowls . . . the multiplication of bikes and scooters, plus buses and trucks and Jaquars and jalopies, until as you approach Papeete, you are in a traffic snarl worthy of La Place de la Concorde."

The World Traffic Engineering Conference, obviously, will have many problems to deal with. It should prove to be a significant and valuable contribution to improved highway transportation throughout the world.

SIMULTANEOUS INTERPRETATION

(Continued from page 23)

Interpreters do not always repeat the exact words of the speakers for they do an editing job as they go along, but still they must give an absolutely faithful version of the addresses. Often, interpreters add words to further explain what the speaker means. Later, he may eliminate unessential phrases.

The rarity of top-notch interpreters may be judged by the stringent demands of the work. Interpreters must know several languages thoroughly, have a broad education, and have exceptional mental alertness and speaking ability. As a State Department official said recently, "A good interpreter must know more than the words of many languages. He must understand the history, politics, economics and culture of these countries, too. He must have the precise mind of the scientist and the imaginative mind of the actor."

Two things that speakers should do to assure smooth interpretation are emphasized by Mrs. Donnelly. Speakers should provide copies of their addresses in advance so the interpreter may become familiar with the content and with scientific or engineering phraseology. And speakers should never stray away from the microphone.

The consequence of mike-straying is illustrated by a recent incident in Washington. After a non-English speaking foreign official had completed an address, the chairman of the meeting, forgetting to speak into the microphone, asked that the visitor be escorted to the door. Failing to hear the instruction properly, the escort took him to the door all right, but on out to National Airport—which was the last place the official wanted to be.

Youcactuahyocan save50% dramore ofeyour signab ank

Stop scraping and scrapping those good old signs! New SNO-FLAKE Reflective Sheeting Remover strips the sheeting *fast, clean, easy* . . . at a cost of only 5¢ per square foot! Just dip, drain and rinse (or apply it with brush or spray)—the entire operation is completed in just 10 minutes! Old sheeting is gone and your sign blank is as good as new. Non-corrosive SNO-FLAKE Reflective Sheeting Remover is effective on aluminum, steel, plywood. You actually can save 50% or more of your sign blank budget . . . a saving that will help you expand your whole sign program!

Save 50%
(or more) of your
SIGN BLANK
BUDGET with
Sno-Flake
Reflective Sheeting Remover

More New
Sno-Flake Products
Specially Developed for Traffic Engineering and Highway Maintenance

SNO-FLAKE Aluminum Cleaner and Blender — Gives sign blanks a fresh, new appearance by removing all oxidized scale. Excellent for etching mill aluminum prior to painting.

SNO-FLAKE Traffic Line Remover C—In 10 minutes removes traffic markings from concrete or asphalt surfaces. Apply directly as supplied—no mixing, no special skill or equipment required.

SNO-FLAKE G-83 Sign Cleaner—Rapidly removes all types of soil including waxes, greases and heavy accumulations of oil. Formulated for use in either manual or mechanized operations, non-toxic, non-corrosive. Harmless to clothing, equipment, vegetation, automotive finishes.

For complete information about any or all of these products, prices, samples, write or phone (collect)

Sno-Flake Products Co., 2485 Beaufait Avenue Detroit 7, Michigan—Phone Detroit 92-10616

WORLD TRAFFIC ENGINEERING CONFERENCE

combining the 31st Annual Meeting of the Institute of Traffic Engineers and International Sessions in Traffic Engineering

INSTITUTE OF TRAFFIC ENGINEERS
1961 ANNUAL MEETING

Technical Program

Monday, August 21

Session 1 10:00-11:45 A.M. ***Presiding*** **— A. F. Malo**

Opening Remarks ..... A. F. Malo
Welcome to District of Columbia ..... Gen. Frederick J. Clarke
Presentation, Past Presidents' Award ..... Edward G. Wetzel
Past Presidents' Award Paper ..... recipient
Presentation, Matson Award ..... Charles W. Prisk
Matson Award Paper ..... recipient

Keynote Luncheon 12:15-2:00 P.M.
Presiding **— G. K. Gravelle**

The Urban Problem — Now and Future

Paul N. Ylvisaker, Director, Public Affairs Program
The Ford Foundation

Session 2 2:15-5:00 P.M. ***Presiding*** **— R. A. Burch**

OBJECTIVES IN METROPOLITAN AREA DEVELOPMENT
R. A. Burch

A Plan for the National Capital Region in the Year 2000
William E. Finley
Director, National Capital Planning Commission

What Does Industry Want and Need from the Urban Area
Howard F. McCloy
Director, Real Estate Division, U. S. Steel Corporation

Traffic and the Economies of Land Use
Philip G. Hammer
Hammer & Company Assoc., Atlanta and Washington

The Housing and Home Finance Agency Programs
Sidney H. Woolner
Commissioner, Community Facilities Administration
Housing and Home Finance Agency

Panel Discussion

Tuesday, August 22

Session 3a 9:00-12:00 A.M. ***Presiding*** **— Sam Cass**

APPLICATION OF DEVICES

Role of Pedestrian Control in Traffic Regulation
Stanley T. Siegel
Director, Bureau of Traffic Engineering, Indianapolis

Radio Frequency Needs — Now and Future
Charles R. Sullivan
Chief, Traffic Planning Section, D.C. Dept. of Highways

TRAFFIC ENGINEERING IN SMALL CITIES
Daniel J. Hanson

Signal Coordination
Robert A. McNeil
City Traffic Engineer, Peoria

CBD Signalization
Robert A. Mitchell
Chief Engineer and Traffic Engineer,
Street and Sewer Department, Wilmington

Pedestrian Control
Allen T. Hayes
Chief Traffic Engineer, Lansing Traffic Dept., Lansing

Peak Hour Parking Restrictions and Reversible Lanes
Herman J. Hoose
Traffic Engineer, Charlotte

Panel Discussion

Session 3b 9:00-12:00 A.M. ***Presiding*** **— C. J. Keese**

DESIGN AND OPERATIONS

Three-Level Diamond Interchonge
Cooper McEachern
Director, Dept. of Traffic and Transportation, Houston

Geometrics of Local and Collector Streets
Harold Marks
Administrative Civil Engineer,
Los Angeles County Highway Department

FREEWAY RAMP TERMINAL DESIGN
Donald W. Loutzenheiser
Chief, Urban Highway Division, B. P. R.

Traffic Control and Behavior
J. Al Head
Assistant Traffic Engineer
Oregon State Highway Department

High Volume Entrance Ramps
George A. Hill
District Engineer, California Division of Highways

Entrance Ramp Studies
Charles Pinnell
Assistant Research Engineer, Texas A & M College

Panel Discussion

Session 4 2:00-4:00 P.M. ***Presiding*** **— A. F. Malo**

Business Meeting
(ITE Members Only)

Wednesday, August 23

Session 5 9:00-12:00 A.M.

Technical Committee Meetings

(Time and room assignments made in advance for all active ITE Committees. Generally open meetings.)

Session 6a 2:00-5:00 P.M. ***Presiding*** **— D. S. Berry**

ADMINISTRATION AND PLANNING

"About 20 Minutes"
Robert S. Holmes
Highway Traffic Products Committee

Duties of Traffic Engineer in Smaller City
Douglas J. Carmody
Director, Parking and Traffic, Modesto, California

Discussion
Joseph C. Oppenlander
Research Associate, University of Illinois

THE TRANSPORTATION PLANNING TEAM

D. S. Berry

The State on the Transportation Planning Team
Irving J. Rubin
Executive Assistant to Commissioner
Michigan State Highway Department

Contribution of the City to Transportation Planning
William R. McGrath
Director of Traffic and Parking, New Haven, Conn.

A Regional Study Organization
John K. Mladinov
Director, Puget Sound Regional Trans. Study

Federal Coordination of Highway and General Planning
D. W. Loutzenheiser
Chief, Urban Highway Division B.P.R.

Panel Discussion

Session 6b 2:00-5:00 P.M. *Presiding* — M. J. Hensley

EQUIPMENT AND MATERIALS

New Techniques in Interchange Sign Treatment
Joseph Fitzpatrick
Manager, Technical Services Department
Minnesota Mining and Manufacturing Co.

Lamp Temperatures and Signal Colors
C. S. Michalski
Chicago Citizens' Traffic Safety Board

Color and Intensity Relationships in Traffic Signals
John P. Hoxie
Corning Glass Works

Revision in Uniform Vehicle Code Affecting Vehicle Lighting
W. L. Groth
Director of Public Safety, Richmond, Va.

Vehicular Signal Systems
Burton W. Marsh
Director, Traffic Engineering and Safety
American Automobile Association

INTERNATIONAL SESSIONS

Technical Program

Thursday, August 24

9:00 A.M. Opening Session

President A. F. Malo, Chairman

Delegates will be welcomed by leading U. S. Government Officials, and by spokesmen for the sponsors, i.e., the Institute of Traffic Engineers, the Permanent International Association of Road Congresses, the World Touring and Automobile Organization and the International Road Federation. Recognition will be given also to representatives of the Organization of American States and other major groups participating in the Conference.

10:00 A.M. Theme I—

THE NEED FOR SCIENTIFIC RESEARCH IN TRAFFIC ENGINEERING AND THE DESIRABILITY OF INTERNATIONAL COOPERATION IN PROMOTING IT

Here will be highlighted an important focal subject of the International Sessions. Based on reports from outstanding research authorities from all over the globe, a delegate from Great Britain will sum up the values of and prospects for intensive international effort on traffic engineering research.

Reports:

Canada—Professor H. M. Edwards, Associate Professor of Civil Engineering, Queen's University, Kingston, Ontario

Germany—Professor J. Schlums, Technische Hochschule, Hanover

Italy—Italian Ministry of Transport

Sweden—Mr. Nils G. Bruzelius, Head, Swedish Research Organization

USA—Mr. Fred W. Hurd, Director, Yale Bureau of Highway Traffic

General Reporter:

Great Britain—Sir W. H. Glanville, Director
Road Research Laboratory

Chairman:

France—Mr. A. Rumpler, Executive Director
International Road Federation, Paris

2:00 P.M. Theme II—

URBAN TRANSPORTATION AND ITS FUTURE

Adequate transportation is a basic need of the world's fast-growing metropolitan community. The evolving solutions leading to enrichment of the full urban life rather than to its impairment are here discussed by an eminent American engineer, assisted by a panel of international experts.

Panel discussion with reports in advance from members

Panel:

Brazil—Mr. Luiz Ribeiro Soares, Chief of Mass Transit Planning for city of Rio de Janeiro

France—Mr. J. Elkouby, Roads and Bridges Engineer, Ministry of Public Works

Germany—Professor B. Wehner, Technische Hochschule, Berlin

Switzerland—Mr. M. Jenni, Traffic Engineer, Zurich

USA—Mr. J. Douglas Carroll, Jr., Director, Chicago Area Transportation Study

USA—Mr. Frank W. Herring, Deputy Director, Comprehensive Planning, Port of New York Authority

USA—Mr. D. Grant Mickle, Director, Traffic Engineering Division, Automotive Safety Foundation

USA—Mr. Don C. Wagner, Managing Director, City of Philadelphia

General Reporter:

USA—Mr. Edward H. Holmes, Assistant Commissioner for Research U. S. Bureau of Public Roads

Chairman:

Great Britain—Mr. J. F. A. Baker, Chief Engineer (Highways) Ministry of Transport

Friday, August 25

9:00 A.M. Theme III—

DESIGN OF INTERCHANGES ON RURAL FREEWAYS

The complexities of freeway design reach their zenith in the myriad details of the modern interchange. The enlightened experience of top specialists in both hemispheres serves as the backdrop for this discussion, which will be guided by a highly respected authority from the United States.

Reports:

Australia—Mr. Henry George, Divisional Engineer, County Roads Board, Victoria

Austria—Mr. J. R. Dorfwirth

Belgium—Mr. E. M. Goelen, Roads and Bridges Engineer, Ministry of Public Works

France—Mr. Thiebault, Head, Motorway Planning Service

German—Mr. F. Heller, Counsellor, Ministry of Transport, Bonn and Dr. Ing Wolfgang Blaschke

Japan—Dr. Hiromasa Sato, Japan Highway Public Corporation, Tokyo

Peru—Mr. José Luis Cano, Consulting Engineer, Lima

United Kingdom—Mr. J. G. Smith, Ministry of Transport

USA—Mr. George A. Hill, Disrict Engineer, California Division of Highways

General Reporter:

USA—Mr. Charles M. Noble, Consulting Engineer, Princeton, N. J. (formerly Chief Engineer, New Jersey Turnpike)

Chairman:

USA—Mr. Robert O. Swain, Executive Director, International Road Federation, Washington

2:00 P.M. Theme IV—

RESEARCH INTO HIGHWAY TRAFFIC ACCIDENTS

A breakthrough to a new understanding of traffic accidents, based on penetrating analysis of environmental and human factors, is the responsible guide to the future engineering of safe highway transportation. Significant findings from recent research will be reported by the foremost experts in this vital area of human welfare.

Reports:

Belgium—Mr. P. Lefevre, Chief Roads and Bridges Engineer, Ministry of Public Works and Reconstruction

France—Mr. Serge Goldberg, Ingenieur des Ponts et Chaussees, Ministry of Public Works

Great Britain—Dr. R. J. Smeed, Deputy Director, Road Research Laboratory

USA—Mr. Karl Moskowitz, Assistant Traffic Engineer, California Division of Highways

General Reporter:

France—Mr. Roger Coquand, Director of Roads and Road Traffic, Ministry of Public Works

Chairman:

USA—Mr. Charles W. Prisk, Special Assistant, Office of Research, U. S. Bureau of Public Roads

Saturday, August 26

9:00 A.M. Theme V—

USE OF ELECTRONICS IN TRAFFIC CONTROL

Advances in the control of traffic, either en masse or as individual vehicles, drivers and pedestrians, are currently marked by skillful and imaginative applications of electronics. Delegates will hear a report of broad international value in this session.

Reports:

France—Mr. H. Boissin, Chief Roads and Bridges Engineer, City of Paris Technical Department

Germany—Mr. G. Littman, Chief of Police, Frankfurt and Mr. Rudolf Budenz

Great Britain—Mr. J. G. Wardrop, Road Research Laboratory

India—Mr. Khan Saheb S.M.A. Pathan, Traffic Control Department, Bombay

USA—Mr. Daniel L. Gerlough, Senior Staff Engineer, Thompson Ramo Wooldridge Incorporated

USA—Mr. O. K. Normann, Deputy Assistant Commissioner for Research, U. S. Bureau of Public Roads

General Reporter:

USA—Mr. Henry A. Barnes, Commissioner, Department of Transit and Traffic, Baltimore, Maryland

Chairman:

To be named

2:00 P.M. Theme VI—

FREEWAY OPERATION

New highway design is inevitably followed by new operating problems. First-hand experience with freeway operation has special significance not alone for traffic and design engineers, but for street and highway administrators, and others as well. A panel of highly competent international authorities, led by a knowledgeable Canadian traffic engineering official, will compare the lessons of experience on a world-wide basis.

Panel discussion with reports in advance from members

Panel:

Germany—Mr. F. Rieckenberg, Oberregierungs-und baurat, Celle

Italy—Ing. Antonino Berti, Director, Technical Office, Province of Milan, Director General of the Autostrada Serrovalle-Milan

Netherlands—Mr. A. G. M. Boost, Director Roads and Traffic Department, Royal Dutch Touring Club

USA—Mr. Edmund R. Ricker, Chief, Traffic Engineering Bureau, Pennsylvania Department of Highways

General Reporter:

Canada—Mr. K. Vaughan-Birch, Director, Traffic Division, Engineering Department, City of Vancouver

Chairman:

Germany—Professor B. Wehner

FIELD STUDY TOUR BY BUS — August 28-September 2

Planners predict that by 1980 the East coast of the United States of America will be one huge urban area from Washington, D. C. to Boston, Massachusetts, with a population estimated at over 30 million persons. This bus tour will provide you with an opportunity to see at first hand many things which are being done today, as well as plans for tomorrow, to handle vast problems which this already developing urban concentration will continue to produce.

Guides will be provided on the tour, who will be persons familiar with cities to be visited. Officials of the areas and departments to be visited will join the tour as the buses enter their respective cities to point out the many things of local interest. On the return trip to Washington, those who so desire may leave the tour at New York City.

Publications List

The publications of the Institute of Traffic Engineers listed below are available from the headquarters office at 2029 K Street N.W., Washington, D.C.

TRAFFIC ENGINEERING Magazine

TRAFFIC ENGINEERING is the official monthly publication of the Institute. It contains original articles of a technical and semi-technical character dealing with traffic engineering and related subjects. It also contains digests of current traffic news of unusual interest, and personal news of members.

Subscriptions ..... $4.50 a year
Foreign Postage ..... $1.25 a year, all countries except U.S. possessions, Canada and Mexico.
Single Copies ... $0.50 each, quantities of 1 to 9.
$0.40 each, quantities of 10 or more.

PROCEEDINGS

The Annual Proceedings of the Institute contain copies of all papers presented at the Annual Meeting.

1960 Edition	$3.00	1952 Edition	out of print
1959 Edition	2.00	1951 Edition	out of print
1958 Edition	1.50	1950 Edition	out of print
1957 Edition	out of print	1949 Edition	out of print
1956 Edition	out of print	1948 Edition	0.50
1955 Edition	0.75	1947 Edition	out of print
1954 Edition	0.75	1946 Edition	0.50
1953 Edition	out of print	1939 Edition	0.50

Set of 1958, 1959 & 1960 Editions $5.00

YEARBOOK

The annual yearbook (published in February) of the Institute of Traffic Engineers, contains a brief description of the organization, copies of the Constitution and By-Laws, and a list of the members with mailing addresses.
Price $1.00 per copy.

TECHNICAL BULLETIN #1

"Adjustable Face Traffic Control Signal Head Standards."

This bulletin has been approved (October 16, 1958) as an American Standard by the American Standards Association. Price $0.50 per copy.

SUPPLEMENT TO TECHNICAL BULLETIN #1

"12-Inch Adjustable Face Traffic Control Signal Head Standards."

This supplement to Technical Bulletin #1 was approved by the Institute in January 1960. Price $0.15 per copy.

TECHNICAL BULLETIN #2

"Pre-Timed, Fixed Cycle, Traffic Signal Controllers."

This bulletin has been approved (October 16, 1958) as an American Standard by the American Standards Association. Price $0.50 per copy.

TECHNICAL BULLETIN #3

"Traffic-Actuated, Traffic Signal Controllers and Detectors"

This bulletin has been approved (October 16, 1958) as an American Standard by the American Standards Association. Price $0.50 per copy.

TECHNICAL BULLETIN #4

"A Model Performance Specification for Purchase of Pavement Marking Paint."

This bulletin was approved by the Institute in January 1960. Price $0.50 per copy.

PROPER LOCATION FOR BUS STOPS

This Technical Committee report of 1954 approved as a recommended practice has been printed as a 12-page pamphlet. Price $0.25 per copy.

INDUSTRIAL PLANT PARKING

A report of Technical Committee 6-F, approved in 1959 as a recommended practice of the Institute and reprinted from TRAFFIC ENGINEERING magazine. 8 pp.
Price $0.15 per copy.

FREEWAY OPERATIONS

This book is a report on the 12 seminars conducted during 1958 and 1959 to study problems presented by the growing mileage of controlled-access roadways. Drivers, accidents, signs, regulations, geometric design, freeway connections, maintenance, policing, and motorists' services are discussed. 88 pp. Price $1.00 per copy.
(Quantity discounts)

AUTO — USA

This pamphlet, issued as a companion piece for the film by the same name, is designed to acquaint citizens in any community with the basic requirements for carrying out a program of transportation improvement. Written in non-technical language, it is available apart from the film. 8 pp. Free.

RESEARCH TO IMPROVE TOMORROW'S TRAFFIC

A reprint of the 1957 Theodore M. Matson Memorial Award paper by O. K. Normann, Deputy Assistant Commissioner for Research, U. S. Bureau of Public Roads. 16 pp. Free.

TRAFFIC ENGINEERING IN TOMORROW'S TRANSPORTATION

A reprint of the 1958 Theodore M. Matson Memorial Award paper by D. Grant Mickle, Director, Traffic Engineering Division, Automotive Safety Foundation. 8 pp. Free.

HIGHWAY SAFETY — A PRIMARY CHALLENGE TO TRAFFIC ENGINEERING

A reprint of the 1959 Theodore M. Matson Award paper by Charles W. Prisk, Director, Highway Safety Study, U. S. Bureau of Public Roads. 4 pp. Free.

AGING AND DRIVING

A reprint of the 1960 Theodore M. Matson Award paper by Burton W. Marsh, Director, Traffic Engineering and Safety Department, American Automobile Association. 24 pp. Free.

NOTE: *Traffic Engineering* and the current *Proceedings* are sent automatically to all ITE members as part of their membership service. Single copies of technical bulletins and reprints listed above are available upon request, without charge, to all ITE members.

Let's Do the Simple Things First!

We hear a lot about electronic controls, super highways, guidance systems for vehicles and other sophisticated departures for the control of highways. These advancements in the safe and efficient movement of traffic need a lot of study and research, and I am fully aware of their necessity.

There is another field, however, which needs the immediate attention of all traffic engineers. Let's get the most out of what we've got. We are going to have our so-called "cowpaths" for a number of years and they are going to get worse as super-highways dump more traffic onto them.

Take a look at the pavement markings in any city—you select it. I will wager there are few cities or states in the snow belt that have decent markings throughout the winter, when they are most needed. Take a look at the signs. They are installed and left there to do the job forever—until they fall down or are knocked down. How many times have you seen a crew cleaning a sign so you can read it?

The other day I sent one of my engineers out to take down signs which were not essential. He came back with *two* (2) *truck loads*. We got a call the next day from the facility involved saying they missed *one* "NO PARKING" sign!

How many vehicles are obstructed because your bus stops are inadequate, full of parked vehicles, or the bus driver is too lazy to pull into the curb? A bus reduces the capacity of a roadway by one lane which can be 50% of your capacity.

It doesn't take a traffic engineer to rectify these conditions. It just takes someone with the energy to accomplish the basic fundamentals.

Trucks are an essential part of our transportation system, but do they *have* to obstruct the street system? To eliminate these obstructions it seems simpler to some to build a new highway than to control the use of the old street system.

We have gone wild about parking meters. Where we need street capacity, isn't the solution to prohibit parking and use the entire street, instead of increasing the obstruction to traffic by multiplying the parking maneuvering every hour or so?

Why do we think a little sign about 20 inches square will direct traffic on a city street but require overhead signs 10 feet high and 20 feet long on the expressway? The city street requires more of the attention of the driver than the expressway! The driver must watch vehicles crossing his path, try to determine if and where a signal is against a background of competing lights, signs, etc., watch out for pedestrians and a dozen other things. Why doesn't he have directions and warnings comparable to the driver on our expressways? It can be said that the speeds are less, but this can be discounted; the city street driver has less time to read signs.

Uniformity of traffic control has received a great deal of interest in the past few months, especially since the new manual has been drafted. Much can be said for and against uniformity but one thing is sure. If every person charged with traffic control is permitted to use *any* device to his liking, we will create a chaotic condition that *no one* will be able to cope with, and which will result in an accident record *much worse* than we have today. Uniformity should not, however, stifle progress. It is my belief that before any new traffic control measure is used to any great extent, limited research should be completed to prove its worth. We know, for instance, that some of our signs are not controlling traffic as they were intended to do. These instances are few in number but are important.

Some responsible agencies should be experimenting with these signs and proposing signs that do the work. Until this is done we are going to drift farther away from the ideal of treating like conditions in a uniform manner regardless of where in this country they occur.

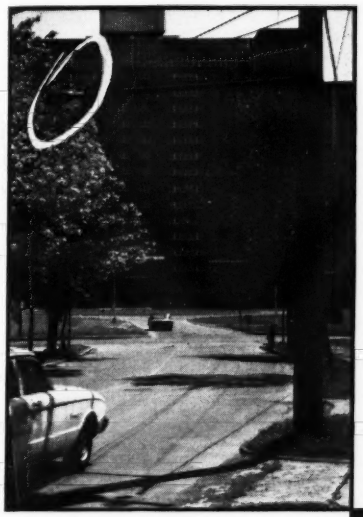
A false sense of accomplishment is sometimes noted just because a control device is changed. Change the color of a sign and you will note a momentary reaction, as it is something different, but this does not prove that it is correct. The new color might work in one or several instances, but would not work in *all* instances.

It is my firm belief that our antiquated highway system could do a reasonably good job, both in safety and efficiency if we put to work the most elementary tools at hand. Let's do the simple things first!!

—L. E. Bender, in the Metropolitan (NY) Section Newsletter

NEW DIRECTION/MOTION DETECTOR

CHEKAR® ultra-sonic vehicle detector recognizes difference between approaching and receding vehicles



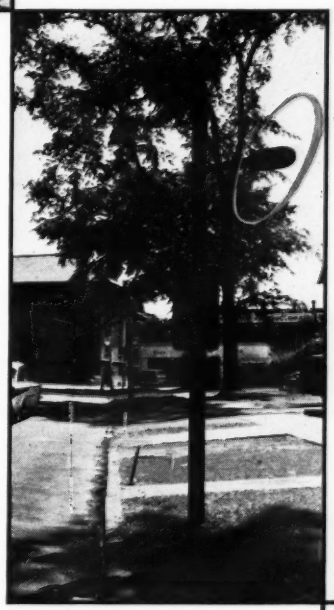
The new CHEKAR® direction/motion detector (Type SVDM) is used with vehicle-actuated signals. It uses ultra-sonic (inaudible) sound waves to detect moving vehicles *approaching* actuated signals—at speeds as low as 4 mph—yet offers high immunity to *receding* vehicles which may enter the detection zone. You get maximum protection against false signal calls by departing vehicles.

LOW COST The Type SVDM vehicle detector is priced to compete with any overhead detector available.

SIMPLE INSTALLATION All components are mounted above ground. No special tools or meters required for installation or adjustment.

EASY MAINTENANCE Electronic circuits use only four tubes, all low-cost radio-TV types, obtainable anywhere. FCC licenses not required.

Mast-arm mounting provides detection for one or two adjacent traffic lanes. Vehicles stopped or parked in one lane do not interfere with detection of moving vehicles in other lane.

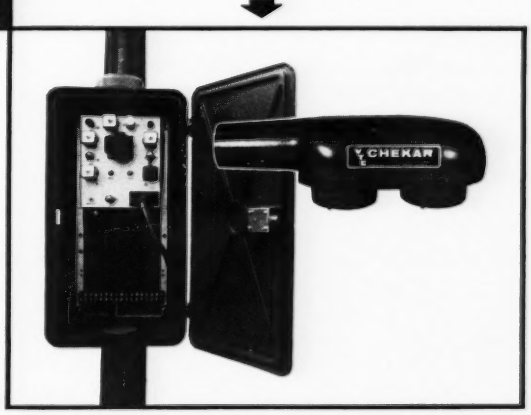


Side-fire mounting at roadside, usable in many locations, offers maximum installation economy. Provides detection up to two lanes out from curb—exact coverage depends on local conditions. (With side-fire detection, parking must be restricted near detector to avoid distorting ultra-sonic detection beam.)

CHEKAR Detectors for All Your Needs

Where motion detection does not meet your requirements — where you need vehicle detection down to a dead stop, or maximum resolution of closely-spaced vehicles—CHEKAR ultra-sonic *presence* detectors Types STD and SVDTare ideal. These performance-proven detectors, together with the new Type SVDM direction/motion detector, provide a selection that will meet practically any requirement. Ask for additional information.

Sensing unit has slip fitter for standard 2″ (2⅜″ O.D.) mast arm. Transceiver chassis mounts in weatherproof case, is plug-connected for easy installation and removal.



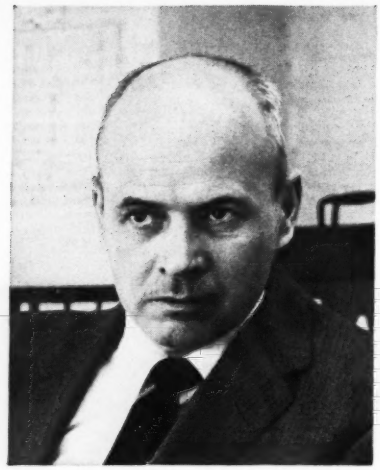
THE SOUND APPROACH TO VEHICLE DETECTION

VEHICLE TRAFFIC CONTROL DIVISION

GENERAL RAILWAY SIGNAL CO.

ROCHESTER 2, NEW YORK

3139



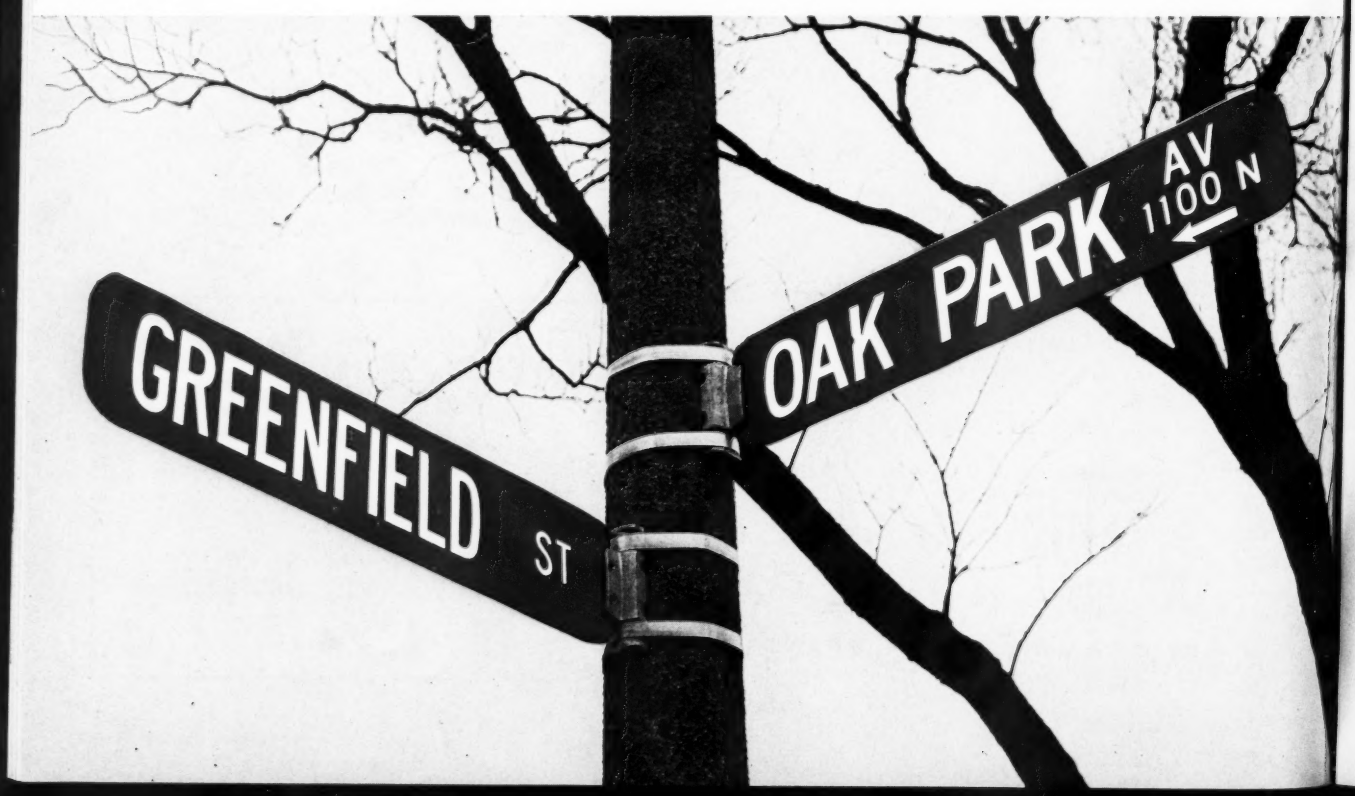
World's Largest Village (61,093) changes to big, bright street name signs of "Scotchlite" Reflective Sheeting. Says Oak Park, Illinois Director of Public Works Glenn Sunde...

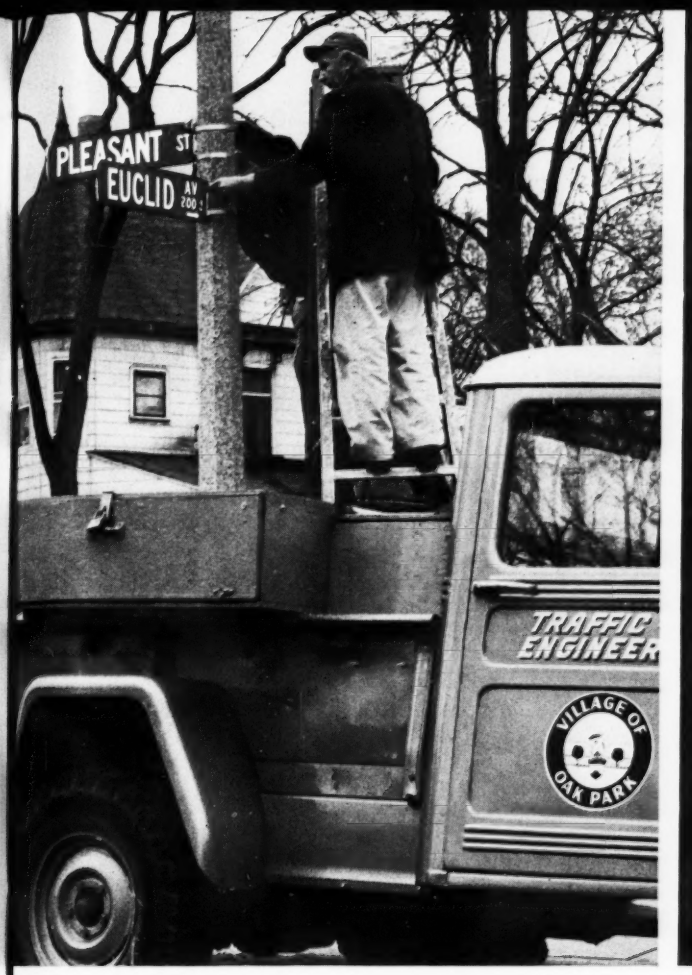
"AN EASY, LOW COST WAY TO MAKE A NEEDED PUBLIC IMPROVEMENT"

To help the ever-increasing flow of traffic find its way through and around Oak Park with the least confusion and delay, a complete change in street name signs is being made. Plain, average-size, black on white signs are being replaced with larger, more readable, white on green street signs of "Scotchlite" Reflective Sheeting.

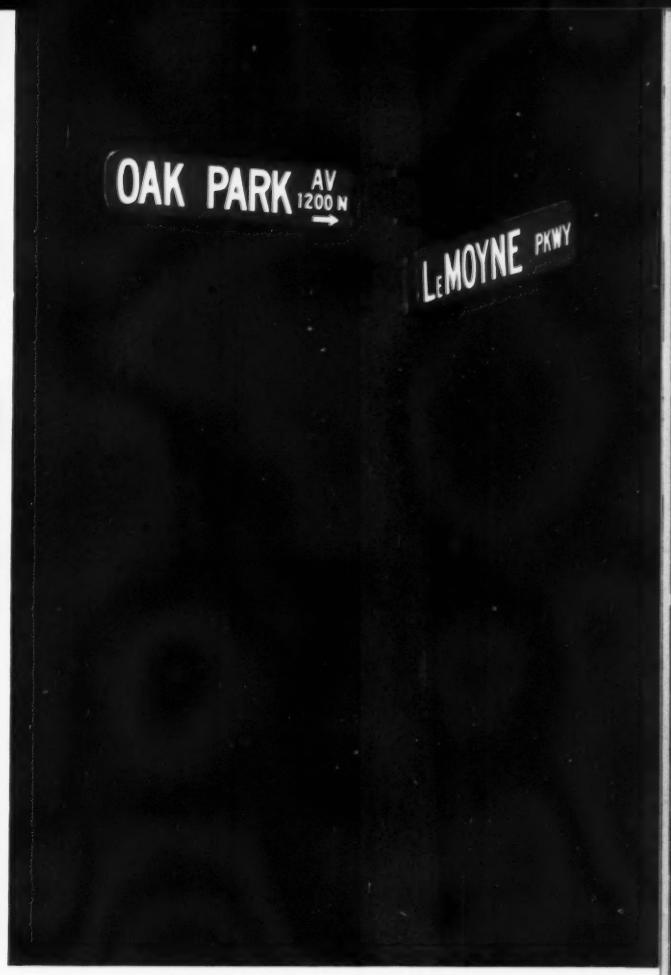
Oak Park Village Manager Mark Keane says, "Our need for clear, readable street name signs at night was most important. Reflectorization with "Scotchlite" Sheeting quickly gave us the right answer. Our new signs are also much easier to see and read during the day, when traffic is especially heavy."

It's a welcome change, too. Director of Public Works Glenn Sunde has been pleased to hear even long-time residents say these new signs are a big help. "In fact," Mr. Sunde has concluded, "this is not only an easy, low cost way to make a needed public improvement. It's also a *popular* program."





CHANGE-OVER to popular, new street name signs at every Oak Park corner is almost complete.



CLEARLY READABLE at night, signs of "Scotchlite" Sheeting never leave drivers in the dark.

LARGE LETTERS, 4" high, on bright green backgrounds give excellent legibility to Oak Park's new signs. Shop Superintendent Bill Stephens holds a panel he has just removed from the "Scotchlite" Vacuum Applicator, which automatically bonded the reflective sheeting to the aluminum blank. Oak Park also makes and maintains its own traffic signs.

***DO PEOPLE LIKE** the street name signs in your community? If there's any question, see your 3M Representative or write Dept. RBI-81, The 3M Co., St. Paul 6, Minnesota.*

SCOTCHLITE
BRAND
REFLECTIVE SHEETING

MINNESOTA MINING AND MANUFACTURING COMPANY
. . . WHERE RESEARCH IS THE KEY TO TOMORROW

"SCOTCHLITE" IS A REGISTERED TRADEMARK OF THE 3M COMPANY

New Sign Manual Issued By Joint Committee

The new Manual on Uniform Traffic Control Devices for Streets and Highways, the first complete revision since 1948 of standards for the design and application of signs, signals and markings, is off the press.

Copies of the 333-page volume, well illustrated and with devices shown in their proper colors, are available at $2 each from the Superintendent of Documents, U. S. Government Printing Office.

The revised standards reflect changes in driving conditions and technical advances in control devices and practices in recent years. Their publication is expected to spur uniformity and modernization throughout the country.

On Federal-aid highway system projects, conformance with the provisions of the new Manual will be mandatory. The Bureau of Public Roads, however, has stated that a reasonable time will be allowed for the gradual replacement of existing installations which may be made obsolete by the updated standards.

Official state, county and municipal groups have also endorsed the revised Manual, which was prepared by the National Joint Committee on Uniform Traffic Control Devices, with the cooperation of the Bureau of Public Roads. Member organizations comprising the Committee include the American Association of State Highway Officials, the Institute of Traffic Engineers, the National Committee on Uniform Traffic Laws and Ordinances, the American Municipal Association and the National Association of County Officials.

The American Association of State Highway Officials, after approving the contents of the new Manual by a two-thirds vote of the state highway departments, requested the Bureau of Public Roads to approve the document as satisfying the uniform and safe signing requirements of the Federal-Aid Highway Act of 1944. The Bureau of Public Roads concurred.

Besides modernizing design standards and warrants in line with today's traffic needs, the Manual for the first time deals with such aspects as freeway signing, control devices for construction and maintenance operations, and civil defense signing. Among other innovations are standards for control signals to facilitate reversible unbalanced lane operation at peak hours.

A basic feature of the new Manual is that many of the options and alternatives in standards which were contained in the old edition have been dropped, thus eliminating many areas of confusion and uncertainty. As the result of research and practical experience, the new Manual is able to recommend a single standard as the best solution in many instances, which represents a substantial step toward greater uniformity.

Generally, larger signs are called for than those now in common use, to provide better visibility especially on multi-lane, high-speed facilities. The new Manual prescribes a standard size for each type of sign, rather than establishing minimums as in the past.

In the work of revision, the Committee sought as far as possible to avoid drastic changes in existing signs, signals and markings which might tend to create confusion for the motoring public.

To encourage prompt and widespread application of the new Manual, the Bureau of Public Roads has an-

Uniform Traffic Signs Make All Our Highways Safer

Recently a national group of state highway officials, traffic engineers and public officials issued a revised manual on uniform traffic control signs and devices. So far as we have been able to determine, none of the amendments in the manual, which has been in existence for more than a decade, will require any great changes either in Grand Rapids or Michigan. This is chiefly because both this city and the state have been in the vanguard in adopting more effective traffic control measures.

Not since 1949 has Grand Rapids used any sign, signal or method of marking that was not uniform with those generally approved by highway experts. This is largely because it has been guided in its decisions by the findings of the Institute of Traffic Engineers. In fact the ITE's influence has been so extensive that most manufacturers of traffic signs and signals now get the ITE's approval before they start marketing new models.

At one time it was possible to buy traffic "stop" signs in at least a half-dozen different background colors. Today they are all the same.

It's not only the signs that have become standardized; their meaning has also. At one time a sign that read "End Speed Zone" meant exactly the opposite in Michigan from what it meant in New Jersey. In our state it meant the end of a controlled speed zone—resume normal driving speed, in other words. But in New Jersey it meant slow down.

This type of confusion is rapidly coming to an end, thanks to the manual. For instance, all states now are adopting the practice of marking no-passing zones by showing a yellow line to the right of the center line. New standardized markings for detours will be used in every state. And the Federal Bureau of Public Roads has promptly announced that only markings and devices recommended by the new manual will be approved for new federal freeways.

The benefits of this uniformity are obvious. Any motorist who learns to drive in Michigan—or any state—will feel safe and at home no matter where he drives in the United States.

So we definitely are making progress in this direction. But the manual's authors are not convinced that everything possible has been done yet. They point out that Canada and Mexico already have adopted Europe's method of using symbols for those motorists who may not be able to read the language of the country they happen to be driving in. It may be visionary to imagine that we shall be flooded with foreign motorists who can't read our signs; but more Americans are driving in other countries. Eventually the engineers may decide that adding symbols to our traffic signs will give us universal protection, as well as protect those foreigners who do drive in our country.

—An editorial appearing recently in the Grand Rapids *Press*.

nounced that Federal-aid funds may be used for sign modernization on a statewide or selected system basis. These funds may also be used for engineering studies to determine needed changes in signing practices. A pilot study of this type now under way in Iowa is designed to develop techniques to assist other states in conducting similar investigations.

President Signs Highway Bill

American motorists will be able to travel on approximately 3,000 newly-completed miles of the Interstate highway system each year for the next ten years, the Better Highways Information Foundation predicted in Washington today.

With the signing by President Kennedy of the Highway Act of 1961 on June 29th, completion of the 41,000 mile system by 1972 is assured. The remaining 30,000 miles of the system will be built steadily in every state over the next decade. Nearly 11,000 miles have been completed or incorporated into the system during the first five years of the program.

Much of the location, engineering, right-of-way purchase and other preliminary steps have been done on a large portion of the remaining mileage. Soon construction will get underway, while many sections of new highway now being built will cease being dusty detours and become smooth, safe stretches of pleasurable super-highway, linking mountains with prairies, midland plains with coastal beaches.

Meanwhile, steady progress in building and improving the Federal-Aid primary and secondary roads is certain, since the new Act also provides up to a billion dollars annually of Federal funds for this program, and this amount is matched by the states. Interstate fund allocations will be forthcoming at the rate of 2.4 billion in 1962, and will increase to a maximum of 3 billion each year beginning in 1967. States put up one dollar for every nine dollars of Federal funds on the Interstate.

"Motorists will soon begin to see and enjoy driving on long stretches of safe, attractively - landscaped freeways," said Ellis L. Armstrong, President of the Foundation. "The temporary inconvenience of detours (there are now about 1200 of these across the U. S., according to AAA estimates) will be forgotten when the opportunity to go places on superhighways is available on the scale that the Interstate System provides."

Armstrong pointed out that there is now one 202-mile stretch of Interstate highway open across the entire east-to-west length of the State of Michigan, while numerous other sections of limited-access expressways make driving easier. Armstrong also predicted that the new Interstate system would save at least 6,000 lives a year when completed, rather than the 4,000 lives a year originally anticipated.

Transportation Planning Seminar in Richmond

Transportation in large American cities reached a critical stage at least 10 years ago. Since then, the problem has grown increasingly complex and is now pre-empting the attention of national and state as well as local leaders.

In medium and smaller communities, however, the crisis is yet to come. Solutions can still be found without extensive disruption of the community —*if aggressive planning and development programs are undertaken without delay*. Leadership for these programs must come from the local official, usually the Public Works Director.

These were major points made by Willard F. Babcock, North Carolina's Director of Highways, keynoting the APWA Seminar on Planning and Programming Urban Street Construction recently held in Richmond, Virginia. The first of a proposed regional series, the two-day seminar was attended by

Coffee-break at the Seminar, l. to r.: D. Grant Mickle, Automotive Safety Foundation; Walter J. Addison, Baltimore County, Md.; and Henry A. Barnes, Baltimore, Md.

local, state and Bureau of Public Roads officials from five states surrounding the Richmond area. Several communities were represented by their transportation planning team—Public Works Director, Traffic Engineer and City Planner.

Planning study techniques were discussed during the first day and again in small discussion groups during the evening. Speakers gave case examples of the application of National Committee on Urban Transportation studies in several cities. Land use studies and the contribution of city planning techniques toward developing a sound plan were also detailed.

The importance of classifying the street system and establishing func-

FOR ACCURATE MEASURING

USE

New Chesterman Metallic Tapes

For TRAFFIC ENGINEERS

- Non Rusting
- No cracking — no breaking off
- Solid leather case
- Brass fittings
- Plastic coated — moisture proof
- Sizes — 50 — 100 — 150 — 200 feet
- Refills available — saves money

Try at our expense; write asking to ship one or two for your approval and inspection. Return if not satisfactory. Prices furnished upon request.

B. G. Reilly Company

P. O. BOX 231
N. SCITUATE, R. I.

P. O. BOX 3393
W. HOLLYWOOD, FLA.

SEND FOR LITERATURE

tional standards for each class was stressed. Again, in the words of the keynoter, the problem is not "What right of way is available?" The problem is "What capacity is needed?"

The final session was devoted to "Carrying Out The Plan." John Bailey, Executive Director, Urban Traffic and Transportation Board, Philadelphia, and Chairman of the APWA Committee on Transportation, discussed approaches to financing and implementing a program. Other speakers dealt with establishing priorities, gaining public support and keeping a plan up-to-date.

ITE members prominent at the meeting were J. P. Mills, Jr., Virginia; Marble J. Hensley, Chattanooga; Alan M. Voorhees and Thomas B. Deen, Washington; John Horn, North Carolina State College, and Donald W. Loutzenheiser, Bureau of Public Roads. Other ITE members are shown in the accompanying photograph.

The next seminar, on this subject planned by the American Public Works Association, will be held in the mid-west during the coming Fall. Other regional meetings to follow will be announced by mail to interested city and state officials.

President's Committee Reports Available

The first of the new reports from the President's Committee for Traffic Safety are now available, according to J. W. Bethea, Secretary of the Committee.

Available are reports of the committees on: Laws and Ordinances (15¢); Public Information (10¢); Traffic Courts (15¢); Education (20¢); Motor Vehicle Administration (15¢); Police Traffic Supervision (15¢); Organized Citizen Support (10¢); Traffic Accident Records (15¢) Engineering (30¢).

These are the reports developed as a result of the conference held in Washington in December 1960, following many months of committee discussion and debate. The reports up-date and replace similar reports last revised in 1949.

Yet to be issued are a summary report and two special reports—one on research and the other on medical care of accident victims.

All orders in quantity should be addressed to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

US Engineers Lecture At Madrid TE Seminar

Three U. S. traffic engineers spent four weeks in Madrid from June 26 to July 22, lecturing at a traffic engineering seminar sponsored by the Spanish Highway Department with financial assistance from the International Cooperation Administration.

The three engineers were: Dr. Donald S. Berry, Professor of Civil Engineering at Northwestern University; Fred W. Hurd, Director, Yale University Bureau of Highway Traffic; and O. K. Normann, Deputy Assistant Commissioner for Research, U. S. Bureau of Public Roads. These three shared the full teaching load for the course, offered to some 60 highway and municipal engineers.

Hoffman Award Nominations Open

Nominations for the Paul Gray Hoffman Award, made annually to an individual in the traffic safety field, are now open, according to the Automotive Safety Foundation.

The Award is designed to honor the *active professionals* in traffic safety. Through the recipient selected annually for an outstanding record of public service, the award aims to recognize the important contributions made by all the career people working to safeguard life and property on the nation's highways. The donor of the award is himself a distinguished pioneer in the U. S. traffic safety movement.

Persons eligible for this 5th Annual Paul Gray Hoffman Award include educators, engineers, enforcement officials, motor vehicle administrators, organization staff executives, researchers and others who make their careers in highway safety. Candidates must be currently employed in and draw their principal means of livelihood from any of the activities embraced in the Action Program of the President's Highway Safety Conference.

Award nominations may be made by an individual or by a local, state or national group. Each nomination must be accompanied by a brief statement (1,000 words or less) setting forth the candidate's traffic safety accomplishments. The record may cover any period of time, *recognition not being limited to annual performance.* Supporting evidence in the form of testimonials, clippings, reports, photos, etc., may be included. No special entry blanks are required.

The board of judges for this top professional honor includes Rex M. Whitton, Federal Highway Administrator; Dr. John A. Hannah, President, Michigan State University; W. Earl Hall, Editor, Mason City (Iowa) Globe-Gazette; Herschel D. Newsom, Master, The National Grange; and Mrs. Raymond B. Sayre, Chairman, Women's Group, President's Committee for Traffic Safety.

Mail all nominations to the Automotive Safety Foundation, 200 Ring Building, Washington 6, D. C. The Foundation is administrator of the Paul Gray Hoffman Award. Closing date for entries is September 15, 1961.

Plan to Honor Public Works Officials

Kiwanis International is asking its members and others interested in the public works field to nominate candidates for the 1961 "Top Ten Public Works Men-Of-The-Year" Awards.

Traffic Engineering is glad to cooperate with Kiwanis in this effort, and urges its readers to nominate individuals they feel deserve such an award.

The "Top Ten" Awards are based on accomplishments with resources and manpower available, engineering and administrative abilities, professional activities, leadership qualities and service to the community. The awards are made to officials on the Federal (including military), state, county and local levels. Nominations for the awards may be made through local Kiwanis Clubs or by application to the American Public Works Association, 1313 E. 60th Street, Chicago 37, Illinois. Deadline for this year's nominations is August 15.

Kiwanis International, which sponsored the event last year, is continuing its support in order to gain recognition for some of the many public works officials who perform outstanding and valuable services to their communities. The nominees, representative of the high caliber of individual associated with public works, may include persons associated with the design, construction, maintenance or operation of a street or highway system, water supply, sewerage system or treatment plant, refuse collection or disposal, public buildings, drainage or flood control facilities, an airport, harbor, or other type of public works installation.

Announcement of this year's winners will coincide with the 1961 National Public Works Week observance set for October 1-7. The ten officials selected will receive plaques commemorating the award at appropriate ceremonies to be held in their communities.

Last year's observance received the official recognition and support of President Dwight D. Eisenhower, and was marked by official proclamations issued by a majority of state governors and the heads of many communities. Tours of public works facilities, parades, open houses and educational film showings also marked the event.

NUTI to Celebrate 25th Anniversary

The Traffic Institute of Northwestern University—pioneer in scientific police traffic supervision—will celebrate its 25th anniversary October 14th.

The commemoration will feature a "Silver Anniversary Tribute" to the founders of the Institute on the premise that they should be honored while still living. Day-long ceremonies will be held on the Evanston campus of the University, the Institute's home since its establishment in 1936, and in Chicago.

Approximately 1,000 Institute graduates, former faculty members, patrons and friends, as well as current students and members of the Institute staff will participate.

Climax of the tribute will be an evening reception and dinner in the Great Hall of the Pick-Congress Hotel in Chicago. Earlier in the day—in Evanston—a painting of the original Traffic Institute headquarters building will be presented. There will also be "open house" at the Institute's buildings—405 Church Street and 1804 Hinman Avenue. (Original site of the NUTI headquarters was 1827 Orrington Avenue.) Class secretaries are arranging class reunion luncheons, and a block of seats has been reserved for the Northwestern-Minnesota football game that afternoon.

Established in 1936 as a police traffic training school with two staff members and a secretary, the Traffic Institute has expanded its program to include virtually all types of traffic training, field and extension services, research and development, a legal information service, and publications in the field of street and highway traffic. The Institute now has 50 full-time employees and 75 part-time guest instructors.

Computer Program for Progressive Traffic Flow

A computer program for the solution of signal progression programs has been developed by Sherwood H. Hiller, City Traffic Engineer of Tampa, Florida.

Based on the mathematical approach to the solution of two-way progression problems developed by Fieser in 1951, the Hiller program has been devised for a Univac Solid State 80 or 90. Hiller reports that the program can also be successfully run on a Univac 120 with certain necessary reprogramming.

This represents an interesting solution to one of the problems which frequently perplexes a city traffic engineer—that of providing the most efficient method of progression on a two-way street. One of the commonly used methods is through the construction of a time-space diagram. The other method has been the mathematical solution developed by Fieser and published by the Eagle Signal Company. The computer method of handling the mathematical solution represents an extremely fast and efficient answer to this problem.

Additional information is available on this method from Mr. Hiller.

Fellowship Students Named at Northwestern University

Two men, Joseph Wattleworth and Joseph Stowers, have been named to share in the $3,000 fellowship grant made by the Automotive Safety Foundation to Northwestern University. The men will be working for their doctorates during the academic year of 1961-62.

Wattleworth has a major interest in the application of the mathematical approach to systems problems in urban transportation. A student at Northwestern last year, he won the student paper contest sponsored by the Midwest Section, ITE, with a paper on a critical analysis of current highway capacity charts.

Stowers, also a student at Northwestern last year, has been on leave from the Bureau of Public Roads, working in urban transportation planning, with emphasis on city and regional planning, geography, economics and public administration.

In addition, three National Defense Graduate Fellowships have been made to men working towards a doctor's degree in urban transportation planning. Recipients of these awards are: Gilbert Satterly, Jr.; Jere Hinkle; and Carl Swerdloff.

Others doing advanced work at Northwestern next year include Everett Carter and Charles Pinnell.

87 Million Drivers Reported in U. S.

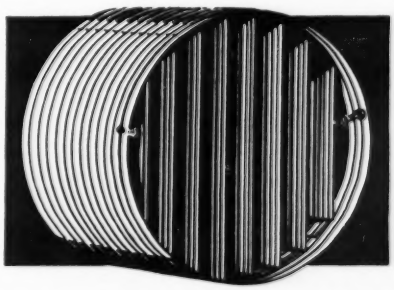
A total of 87.4 million motor-vehicle operators licenses were in force in the United States during 1960, Federal Highway Administrator Rex M. Whitton has reported.

The estimate, prepared by the Bureau of Public Roads, U. S. Department of Commerce, from reports received from state agencies, was 3.4 per cent higher than the 84.5 million total in force during 1959. There were 1.20 licensed operators per registered motor vehicle, Mr. Whitton noted.

The ratio of 1.20 licensed operators per registered motor vehicle reflects the long-term trend toward one operator per vehicle, although the ratio has been fairly constant in recent years.

STRAITRAY

Scientifically Controls Traffic Signal Visibility

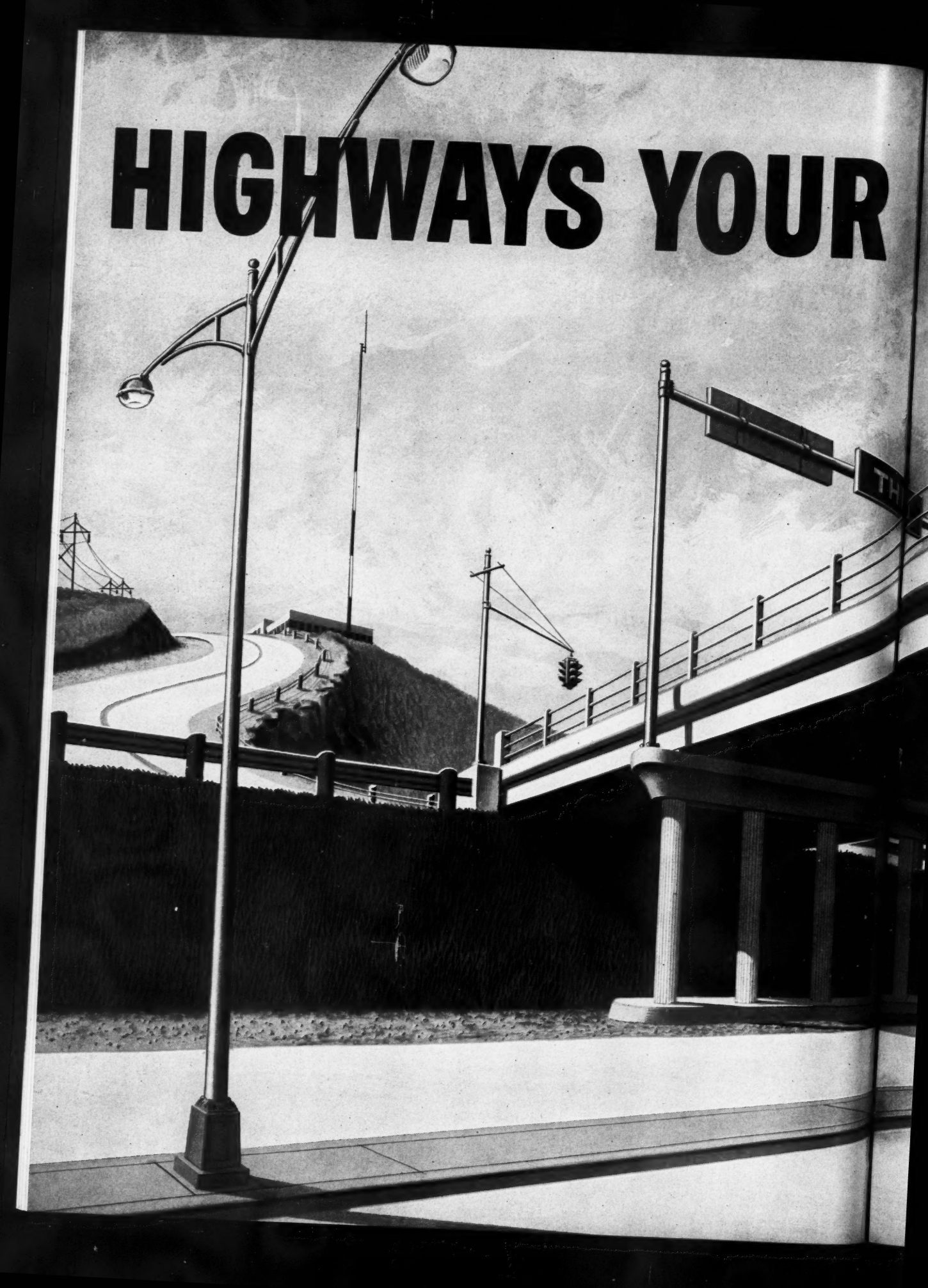


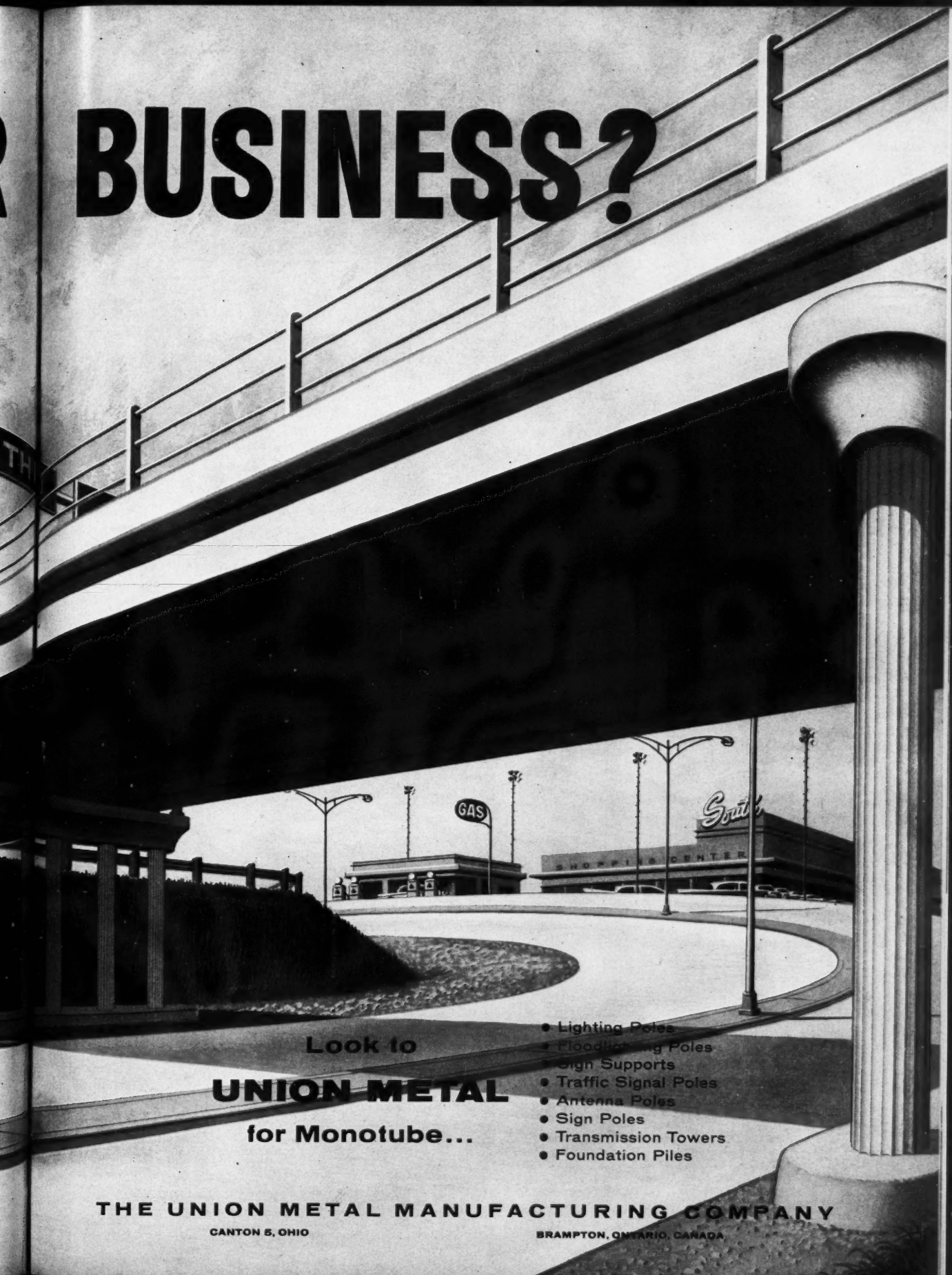
Do a better, more efficient job on your Signal System at small additional cost.

With STRAITRAY Ray Director the Signal Light is seen only by the motorist or pedestrian required to obey that signal. Eliminates the practice of "jumping the light" as there is no "tip off" as to when light is about to change.

Write for FREE technical brochure and price schedule:

PAM COMPANY
1951-B N.W. Wilson Street
Portland 9, Oregon


HIGHWAYS YOUR


BUSINESS?
GAS
Look to
UNION METAL
for Monotube...
• Lighting Poles
• Floodlighting Poles
• Sign Supports
• Traffic Signal Poles
• Antenna Poles
• Sign Poles
• Transmission Towers
• Foundation Piles
THE UNION METAL MANUFACTURING COMPANY
CANTON 5, OHIO
BRAMPTON, ONTARIO, CANADA

New Appointments

Corgill Moves to Insurance Institute

William E. Corgill (Assoc. Mem., ITE) has been named a traffic consultant for the Insurance Institute for Highway Safety, Washington, D. C.

William E. Corgill

Just prior to joining the IIHS staff, Corgill was assistant director of the New York State Citizens Council on Traffic Safety, with headquarters in New York City.

Corgill will serve as a consultant in selected states in which the IIHS provides "direct assistance" to the official traffic safety programs. In addition, Corgill will specialize in traffic engineering activities.

A native of Utica, N. Y., Corgill attended Sampson College, near Ithaca, N. Y., from 1946 to 1948 and received a B.S. degree in civil engineering from Bucknell University, Lewisburg, Pa., in 1950.

He worked in the Traffic Engineering Division of the New York State Department of Public Works in Buffalo from 1950 to 1952. Recipient of a Rand-McNally fellowship, he took graduate work in traffic engineering during the 1952-53 academic year at the Yale University Bureau of Highway Traffic.

From 1953-57 Corgill served as traffic engineer in the Accident Prevention Department of the Association of Casualty and Surety Companies, New York City. He joined the traffic consulting firm of Wilbur Smith and Associates in July, 1957, and worked in Tampa, Fla., and Columbia, S. C., until he resigned in December, 1960, to become assistant director of the New York State Citizens Council on Traffic Safety.

Corgill served overseas in World War II with the 1st Armored Division Engineers.

He is a licensed professional engineer in New York, South Carolina, and Florida.

Marsh Given Honorary Degree by Worcester Tech

Burton W. Marsh (Hon. Mem., ITE), director of the Traffic Engineering and Safety Department, American Automobile Association, Washington, was the recipient on an honorary Doctor of Engineering degree at the June commencement of Worcester Polytechnic Institute, Worcester, Mass.

Burton W. Marsh

The citation referred to "his distinguished and conspicuous achievements in his chosen profession and for the enlightened leadership he has given it."

Marsh completed his undergraduate work at Worcester in 1920, and shortly thereafter became one of the world's first traffic engineers in Pittsburgh. He later held the same post in Philadelphia before being appointed to his present position with the AAA.

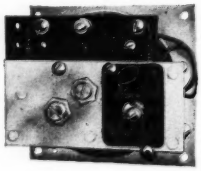
For Flashing Signals and Beacons

Specify The Flashers With Performance Proven Dependability

engineering and design features that have made Time-O-Matic the leading manufacturer of flashers since 1932

- open frame construction for efficient heat dissipation
- adjustable 50-60 flashes per minute
- not affected by extreme temperature variations
- slow speed induction motor
- hardened, polished pivots
- bearings, factory lubricated for life of the flasher
- available with or without radio interference eliminators

NEW ! !
Model 46
1 or 2 circuit, front-mounted cams and contacts out in the open for fast, easy adjustment, replacement. Compact size 4⅜" high, 4" wide, 2¼" deep



Model 3
1 or 2 circuits

Model 37 Jack-mounted
Available with or without meter base and cover, as shown, 1 or 2 circuits

Applications

Safety Zones
Caution Signals
Traffic Islands
Loading Zones
Warning Beacons
Flashing Stop Signs

Write for literature and specifications

TIME-O-MATIC
Division of E-S Industries, Inc.
A SIGN OF GOOD CONTROL SINCE 1932
P.O. Box 850, Danville, Illinois, Phone Hickory 2-0611
Canadian Agent: Sangamo, Ltd. • Leaside, Toronto 17, Canada

Osterhoudt Retires from Connecticut Department

Earle W. Osterhoudt (Mem., ITE) has retired from the Connecticut State Highway Department after 30 years of service with the organization. He has been chief traffic engineer since 1951.

Osterhoudt joined the department as a highway control engineer in 1931 after working as an engineer for private concerns. He is a graduate of Hillyer College and in 1946 completed the Yale Bureau of Highway Traffic course.

Under his direction, the traffic engineering program in Connecticut has been recognized by several awards from the Institute and from the National Safety Council.

He was the first president of the New England Section of the Institute and is a registered professional engineer in Connecticut.

Riddell Receives O'Farrill Award

William J. Riddell, design engineer from Saskatchewan, Canada, has received the O'Farrill Highway Award given annually to the outstanding student in the International Road Federation's fellowship program.

The award was presented by Robert O. Swain, IRF executive director, during a banquet in Milwaukee honoring the 44 foreign highway engineers who have completed a year of graduate studies in United States universities under the IRF program. Mr. Riddell attended Purdue University.

The O'Farrill Award for outstanding scholarship is named in honor of Romulo O'Farrill, president of the Mexican Highway Association. The judging committee consisted of Professor Emmett H. Karrer of Ohio State University (chairman); Professor W. H. Goetz, Purdue University; and Professor Donald Berry, Northwestern University.

Since the initiation in 1949 of the IRF fellowship program, 264 engineers from 71 countries have taken the postgraduate training in preparation for furthering the communications program of their native countries. At the conclusion of the academic year the students go on an observation tour of highway facilities and equipment plants.

This year's group of graduate engineers includes representation from Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Canada, Colombia, Costa Rica, Cuba, El Salvador, France, Ghana, Haiti, Hong Kong, Iceland, India, Iran, Iraq, Italy, Jamaica, Japan, Korea, Lebanon, Malaya, Nigeria, Norway, Philippines, Southern Rhodesia, Spain, Sudan, Surinam, Sweden, Thailand, Uganda, United Arab Republic, Venezuela, Viet Nam.

Ciccolella Named By ESNA

The Elizabeth Division of Elastic Stop Nut Corporation of America has appointed Dr. J. A. Ciccolella as Director of Engineering for Signal Products. Prior to his retirement on May 1, 1961, Capt. Ciccolella had been Chief of the United States Coast Guard Testing and Development Division, Washington, D. C., with responsibility for all Coast Guard-sponsored research activities.

J. A. Ciccolella

In his new assignment, Dr. Ciccolella will direct development and application engineering of the signal devices produced at ESNA'S Elizabeth facility.

Friar Named Manager, Outdoor Lighting by Union Metal

Calvin Friar has been named as Manager, Outdoor Lighting Products, Union Metal Manufacturing Company, Canton, Ohio.

Prior to joining Union Metal in 1953 as a sales engineer, Mr. Friar was associated with the Maine Highway Department and was the Foundation Engineer for Stone & Webster Engineering Corp., Boston. In 1959 he was appointed Assistant Manager of Union Metal's Northern California-Northern Nevada District with headquarters in San Francisco.

Calvin Friar

A native of Fall River, Massachusetts, Mr. Friar was graduated from the University of Maine and has a Master of Science degree in Civil Engineering. He is a veteran of World War II and was discharged from service as a First Lieutenant in the Transportation Corps.

Mr. Friar is a Registered Professional Engineer, a member of the Illuminating Engineering Society, and the American Society of Civil Engineers.

Job Changes

William H. Claire—formerly an urban renewal and planning consultant in Pasadena, California; is now President of the Pacific Urban Renewal Corporation in Los Angeles.

Wallace A. McLaughlin—formerly Senior Traffic Engineer with the Saskatchewan Department of Highways in Regina, Saskatchewan; is now assistant Professor of Civil Engineering at the University of Waterloo in Waterloo, Ontario.

Charles E. McLeroy, Jr.—formerly Senior Traffic Engineer with the City of Corpus Christi, Texas; is now Traffic Engineer with the City of Midland, Texas.

Paul C. Petrillo—formerly Assistant Director of the Traffic Engineering and Safety Department of the Automobile Club of New York City; is now Traffic Engineer with the Southeast Engineering Associates in Pompano Beach, Florida.

Kenneth Pulliam — formerly Chief Traffic Engineer, Planning and Traffic Division of the State Road Commission of West Virginia in Charles-

ton; is now Programmer-Analyst with the General Electric Computer Department in Bethesda, Maryland.

James B. Rudden—formerly Assistant Commissioner of the Department of Transit and Traffic in Baltimore, Maryland; is now on the Technical Staff of the Surface Traffic Section of Thompson-Ramo-Wooldridge, Inc. in Chicago, Illinois.

Title Changes

Wallace L. Braun—is now Special Assistant to the Deputy Director of Traffic Engineering and Operations with the D. C. Department of Highways and Streets, in Washington, D. C.

Neil B. Clark—is now Traffic Engineer, Western District, City of Los Angeles, California; was Traffic Engineer with the Department of Traffic in the City of Los Angeles.

Gerard L. Drake—is now Principal Associate with Wilbur Smith and Associates in Columbia, South Carolina; was Associate, Western Division in San Francisco, California.

Melvin J. Kohn—is now Assistant to the Director of the New Jersey Highway Authority (Garden State Parkway) in Red Bank, New Jersey; was Traffic Engineer and Assistant Operations Manager.

W. L. Raymond—is now Traffic Engineer with the firm of Gannett, Fleming, Corddry and Carpenter, Inc. in Harrisburg, Pennsylvania; was Project Engineer.

Robert E. Schmidt—is now Assistant Western District Sales Manager with the Automatic Signal Division of Eastern Industries, Inc. in California; was Sales Engineer in East Norwalk, Connecticut.

New Publications

The Municipal Year Book, 1961.
Orin F. Nolting and David S. Arnold, editors, International City Managers' Association, 1313 East 60 Street, Chicago 37, Illinois. June, 1961. 594 pp. $10 postpaid.

The broad range of municipal activities in the United States is examined anew in the 28th annual edition of the *Municipal Year Book* just off the press. This authoritative source book on local government covers the range from municipal organization to the many functions performed by cities, towns, and villages throughout the country.

Considerable attention is given in the 1961 edition to the effects of the 1960 census, and final figures on population and land area are shown for all cities over 5,000 population. The problems of metropolitan areas are discussed in several sections of the *Year Book* with respect to federation, special districts, intergovernmental cooperation, annexations, and area-wide planning. Reports from 50 regional planning agencies provide the basis for a review of trends and future prospects. Also new is a section surveying the financing of sewerage service in 650 cities over 10,000 population: use of sewer rentals, basis of charge, financing sewer trunk line and treatment facilities, and methods of financing sewer laterals in new subdivisions and in older, built-up areas. Another new section provides data for more than 700 cities over 10,000 on the number of city-owned off-street parking lots, the number with a charge for parking, and the number of cars that can be accommodated at one time.

Regular sections of the *Year Book* provide all-new information on zoning requirements for elimination of nonconforming uses; subdivision regulations for land to be set aside for parks, playgrounds, and schools in residential developments; and overtime pay practices for policemen and firemen. Other up-to-date information covers personnel organization, financial statistics, police and fire data, forms of municipal government, directories of city officials, bibliographies in various fields, and model municipal ordinances.

In all, there are 19 major tables containing a vast amount of information about individual cities. This information is analyzed and summarized. Consolidated data are provided for groups of cities classified according to population groups.

New developments in each of the fields are reviewed in articles written by experts with intimate knowledge of various fields, such as metropolitan area developments, municipal law, urban counties, state municipal leagues, as well as municipal functions such as police, fire, personnel, public works, public health, education, and the like.

The *Year Book* is valuable for making intercity comparisons of such things as working hours in city hall, civil service coverage, police cars and patrol coverage, fire equipment, overtime pay practices for policemen and firemen, staffing for planning departments, and salaries of many municipal officials and employees.

Social and Economic Impact of Highways
Review of important studies and selected bibliography, Office of the Staff Economist, Massachusetts Department of Public Works, 100 Nashua Street, Boston 14, Massachusetts, April, 1961—87 pages.

As part of the Department's work on the social and economic impact of highways, a review of important studies in this area together with a selected bibliography has been prepared. In order to develop additional interest in studies of this type dealing with an important aspect of the community, state and national life, the office of the staff economist in the Department of Public Works is willing to supply copies of this publication and others which are developed to people interested in economic impact of highways.

Report on Study Procedures, Data Collection Phase
PJ Report No. 1, Penn Jersey Transportation Study, Philadelphia, Penn. March 1961. 30 pp. (processed) $2.08 (Order from Pennsylvania Department of Highways, Room G29—North Office Bldg., Harrisburg, Penna).

This is the first of a series of reports of the Penn Jersey Transportation Study. It gives a general description of the 14 major data collection projects undertaken by PJ. This is an interim report, since full details of the surveys will be published separately in a manual series.

Positions Available

SPOKANE, WASHINGTON

Position: Traffic Engineer I (two positions available).
Requirements: Engineering degree with courses or experience in traffic engineering field. Satisfactory traffic engineering experience may be accepted in lieu of degree.
Salary: $6,168 to $7,200
Starting salary dependent upon qualifications.
Apply: E. J. Leland, City Traffic Engineer, 411 City Hall, Spokane, Washington.

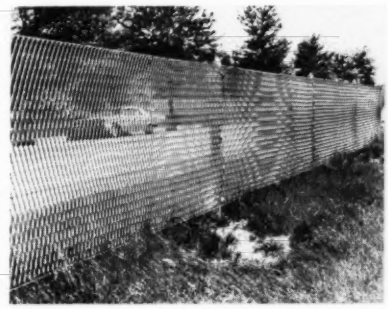
(Continued on page 58)

New Equipment and Methods

Publication of product announcements in this section should not be construed as endorsement or approval by the Institute of Traffic Engineers

Headlight Glare Reduced

A new product, designed to virtually eliminate the hazard of blinding headlight glare on divided highways, has been announced by Aluminum Company of America.



Called Alcoa Glare Screen, the headlight barrier system is installed in the medial strip of heavily traveled main roads. It consists of a four-foot high fence of aluminum expanded metal mesh, which effectively blocks out light from oncoming vehicles.

Ideal for reducing nighttime danger on curves, or on straight-away stretches with narrow medial strips, the new Alcoa screen needs no painting and is thus virtually maintenance free. Although it blocks direct headlight glare, the screen allows an almost unimpeded vision of the surrounding countryside, when viewed at an angle of about 90 degrees.

John N. Schumacher, in charge of this new product for Alcoa, states, "This screen design meets the urgent need for an inexpensive device to eliminate headlight glare, a recognized cause of accidents. It has a life expectancy exceeding 40 years, and is easily erected and transported.

"Its use in conjunction with proven types of physical barriers should greatly improve nighttime highway safety. With the new glare deflector system, it will be possible for drivers to use their own headlight high beams without endangering motorists traveling in the opposite direction. This has the effect of increasing the driver's area of visibility by several hundred feet," he added.

Installations of the new Alcoa screen already have been made by several states. These are located on U. S. 130 near Hightstown, N. J.; along the Gary East Expressway (Interstate Route 35) in Oklahoma City, Okla.; and on U. S. 81, near Fort Worth, Tex. Other states, including California, New York and Michigan, also have authorized installations.

For further information on the new Alcoa Glare Screen system, which features aluminum line posts, as well as top and bottom tension wires and fasteners, contact any Alcoa sales office or 794 Alcoa Building, Pittsburgh 19, Pa.

New Chemical Products

A major manufacturer of specialty chemicals for the automotive industry, Sno-Flake Products Co., of Detroit, Mich., is entering the highway and traffic engineering field with a line of new chemical products, according to an announcement by Maurice German, president.

The new products include a chemical compound to remove reflective sheeting and enamel from highway signs, a traffic line remover, sign cleaner, and an aluminum cleaner and blender.

The reflective sheeting remover or stripper was developed for removal of reflective sheeting from sign blanks, making it possible to salvage blanks which are now normally discarded. The remover is applied by dip, brush or spray methods. After a few minutes, the sheeting is washed away. Scraping is eliminated. The product can be used with aluminum, steel or plywood signs.

The company's new traffic line remover is formulated to remove traffic markings from concrete and asphalt road surfaces. It loosens the marking in ten minutes, after which the marking is scrubbed with detergent and water to form a slurry, which can be rinsed away with water.

Signs of all types can be readily cleaned with the new G-83 sign cleaner, used with mechanized equipment or applied manually. The cleaner rapidly removes all types of soil, waxes, greases and heavy accumulations of oil.

The aluminum cleaner and blender is formulated to remove the oxidized scale from aluminum sign blanks and to give the blanks a fresh, new appearance. The product may also be used to etch aluminum prior to application of paint. Application is by dip, brush or spray.

Sno-Flake Products Co. originated wheel polishing compounds for polishing lacquer and other automobile finishes, and has been a major supplier to the automotive industry since 1914. Thomas B. McCarthy, vice president and director of sales, has been associated with traffic engineering and the highway field for 35 years.

Sno-Flake Products Co., 2485 Beaufait Avenue, Detroit 7, Michigan.

New Aerial Lifts

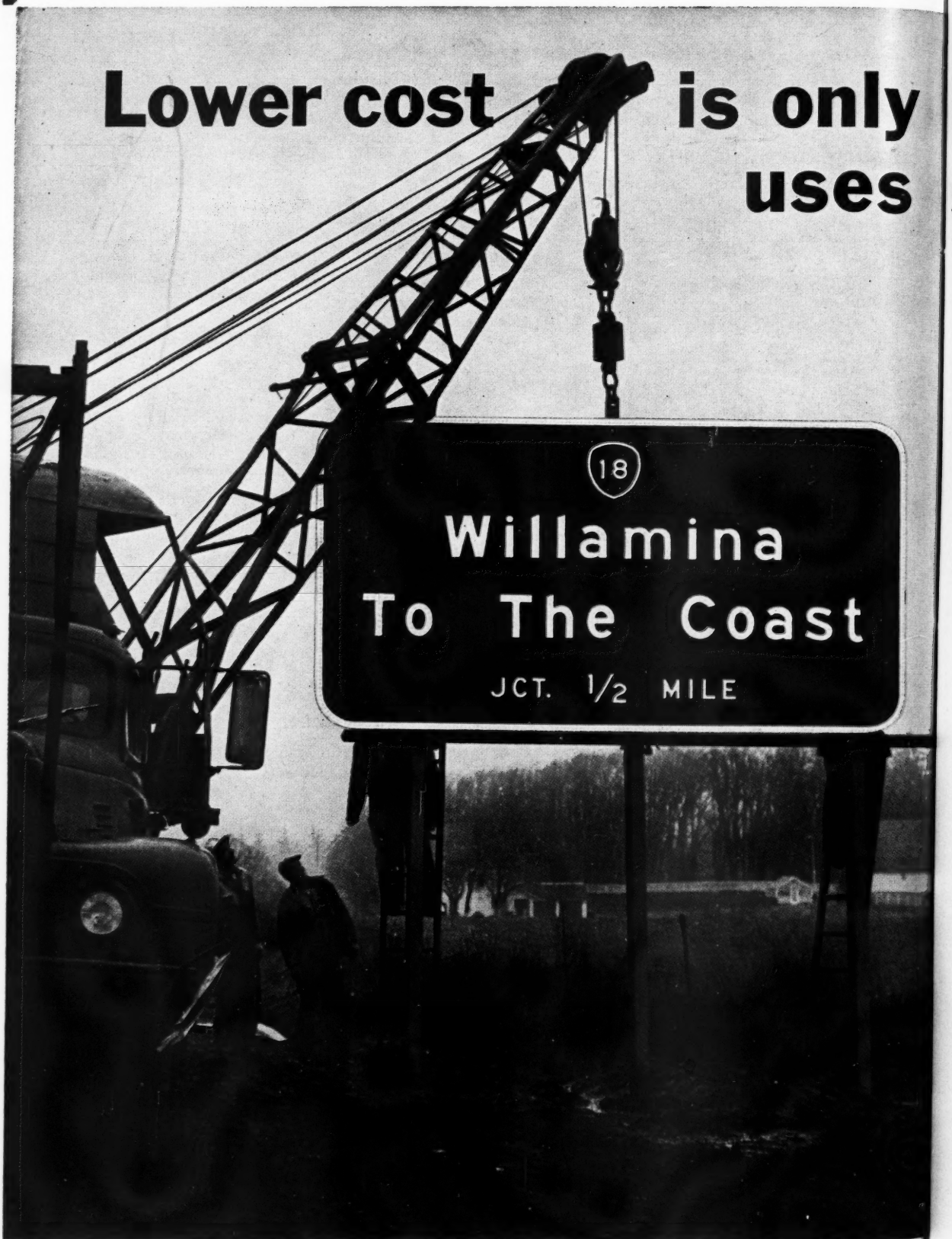
A new line of aerial lifts with advanced design, construction and performance features has been announced by Hunt-Pierce Corporation of Milford, Connecticut. Designed for a wide variety of overhead operations for utilities, Municipal and State, Street and Highway Departments, the new Servi-Lift units require no outriggers and may be mounted on vehicles as small as 1-ton trucks.

The line provides a range of maximum working heights from 36′ to 50′, and bucket load capacities from 300 to 600 lbs.

Three basic Servi-Lift models are available for canopy mounting on an "H" frame which leaves truck deck and compartment space clear and permits mounting with minimum modifications on any standard or existing body. The Hunt-Pierce Torsion-bar Stabilizer provides complete stability for lift operation, even with the truck in motion.

The entire Servi-Lift structure, which includes bucket, upper boom, lower boom, and turret arm, is built of fiberglas for exceptional strength and maximum insulation.

Primary power source is a standard



New colorfast green overlaid plywood with reflective button legend and border is used for green background direction signs.

one reason why Oregon signs of overlaid plywood

MODERN REFLECTORIZED OVERLAID PLYWOOD signs do a better job for the taxpayer as well as the motorist in Oregon.

State highway officials estimate the overall cost of an overlaid plywood sign installation averages 20 percent less than other acceptable materials. Savings are based on lower basic material costs, faster fabrication and finishing (neither sign face nor back is painted; reflective legend is applied direct)—plus elimination of the need for special back framing on signs up to 40 square feet in area.

But lower cost is only part of the story. Basically, Oregon uses overlaid plywood because it makes a strong, good-looking sign that stands up under prolonged weathering and deliberate or accidental abuse.

All told, the state maintains over 100,000 signs; 47,000 informational, 20,000 warning and 35,000 regulatory. Ninety percent are reflectorized, with reflective legend and border applied directly to the overlaid plywood surface. Key directional signs are illuminated. Black high density panels are used for warning and regulatory signs. New color-fast green acrylic overlaid plywood is used for green background direction signs to conform to national color coding on Interstate and other highways.

FOR MORE INFORMATION (detailed specifications, application data, etc.) write:

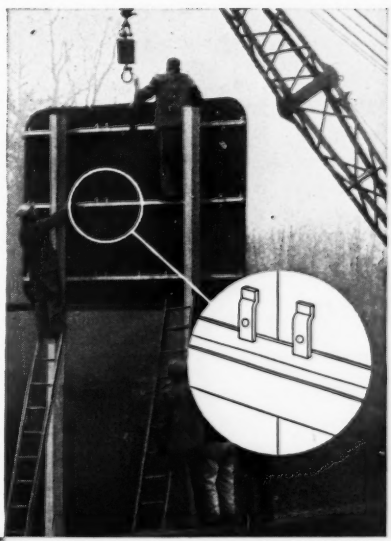
DOUGLAS FIR PLYWOOD ASSOCIATION

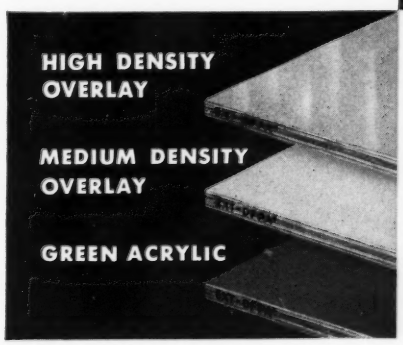
TACOMA 2, WASHINGTON

—an industry-wide organization devoted to research, promotion and quality control

Always specify by DFPA grade-trademarks

DFPA TESTED QUALITY





New panelized sign system used on recent Oregon installations employs standard aluminum girts and special clips. System is highly economical, permits flexibility in sign sizes and shapes. Developed by Douglas Fir Plywood Association, it meets all AASHO standards.

Medium density overlaid plywood is for plain painted signs; **high density** requires no paint protection and permits direct application of reflective sheeting. **New acrylic overlay** comes in green and white for signs with painted or reflectorized legend.

commercial electric generator (4000 Watt A. C., 220 V nominal output, 3 phase, four wire) driven by auxiliary motor or by the truck engine. This not only powers lift operations but provides ample power for floodlights and a variety of power tools, etc.

Two electrically driven hydraulic power packs are used for boom elevation. Horizontal rotation is provided by a self-locking gear head motor drive equipped with a fail-safe brake. Each element of travel, therefore, has its own individual power unit enabling all to be operated simultaneously at normal speeds. Simple, highly efficient electric and hydraulic systems, both of which utilize easily replaceable standard components, reduce Servi-Lift maintenance to a minimum.

Continuous 360 degree horizontal rotation of the entire unit with no stopping point, lower boom travel from horizontal to vertical, and 270 degree rotation of the upper boom provide exceptional operating flexibility and coverage of a wide working area. One hand, push button type operating controls governing all movements, are located in the bucket and at truck level.

All control and power systems are fail-safe. A lock valve at each orifice of the hydraulic cylinders prevents booms dropping in case of power failure. Both booms and rotation of the unit can be actuated manually if necessary. For operations where high voltages are involved, a high dielectric (50KV) bucket and insulated operating controls are available.

For complete information on Servi-Lift models and accessory equipment, write Hunt-Pierce Corporation, 59 Meadow Street, Milford, Connecticut.

Collapsible Standard

A new multipurpose sign standard designed for holding message and directional signs needed in many different lines of governmental, municipal, industrial and service business is now being manufactured and marketed by G. D. Bavin Co., Los Angeles 57, California.

The "Cadet" (Pat. Pend.) sign standard readily lends itself to a multiplicity of uses such as: Warning—Traffic Direction — Guide Signs—Safety—Trade Mark and Company Insignia — Sales Announcements — Special Events—Price Specials—actually "For Use Wherever Temporary Signs Are Needed."

This new, quickly collapsible, multipurpose sign standard holds signs of various shapes and sizes and is especially adapted for use by or at: Airports—Building Construction—Chemical Plants—Docks and Wharves—

CADET SIGN STANDARD IN USE, & COLLAPSED FOR TRANSPORT & STORAGE. G. D. BAVIN CO.

Garage and Parking Areas—Industrial Plants—Military and Ordnance—Institutions of all types — Municipal (Roads, Streets, Superhighways, Parks)—Mining and Quarrying—Governmental (National, State, County, City) — Public Utilities — Petroleum Industry—Real Estate Tracts—Railroads—and for Trucking and Freight Transportation.

A principal "Cadet" feature: Quick collapsibility from its working position to a 1" thickness. Collapsing is accomplished through releasing a simple, positive locking device which holds the sign upright. When unlocked and the sign frame is lifted up, the frame base sections come together, the sign bracket swings down and folds between the frame sections. This compactness (only 26 3/4" x 22" x 1" thick) allows for storage without loss of space and for easy transportation from one place to another. No time-wasting bulkiness to contend with.

"Cadet" requires slightly less than 6 sq. ft. of ground space, or 22" x 27". The 19 1/2" height properly elevates the sign for quick attention and desired distance visibility. Total height from ground surface to top of sign: 43 1/2". The base spread—37"—will not allow the "Cadet" to blow down in high winds or gusts of winds created by fast moving traffic. The bracket slots hold the sign firmly in place. Individual sign requirements can be filled through local sign manufacturers.

Specifications: Two flagholders are provided on sign bracket. Frame: Sturdy, durable 1" angle iron. Welded construction. Finish: Black enamel. Weight: 11 1/4 lbs.

For complete information address: G. D. Bavin Co., 2500 West Sixth Street Building, Los Angeles 57, California.

Signal Attachment Introduced

Use of an inexpensive device on traffic signal installations, visible only to oncoming auto and foot traffic, is receiving widespread acceptance from traffic and safety engineers throughout the country.

Called the "Straitray", this patented louver-type masking device affords just enough contrast against the background of a red signal lens so that the driver can readily determine whether the light is on.

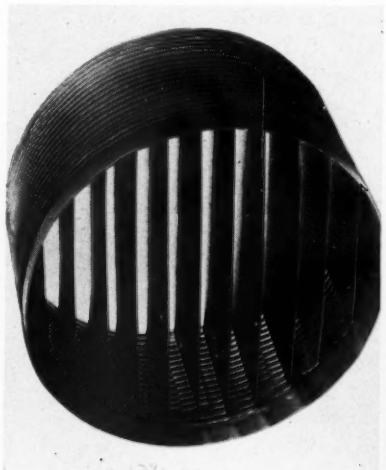
Straitray ray directors also reduce the hazardous practice on the part of motorists and pedestrians to "jump the light," because they are unable to see when the cross traffic lights are about to change.

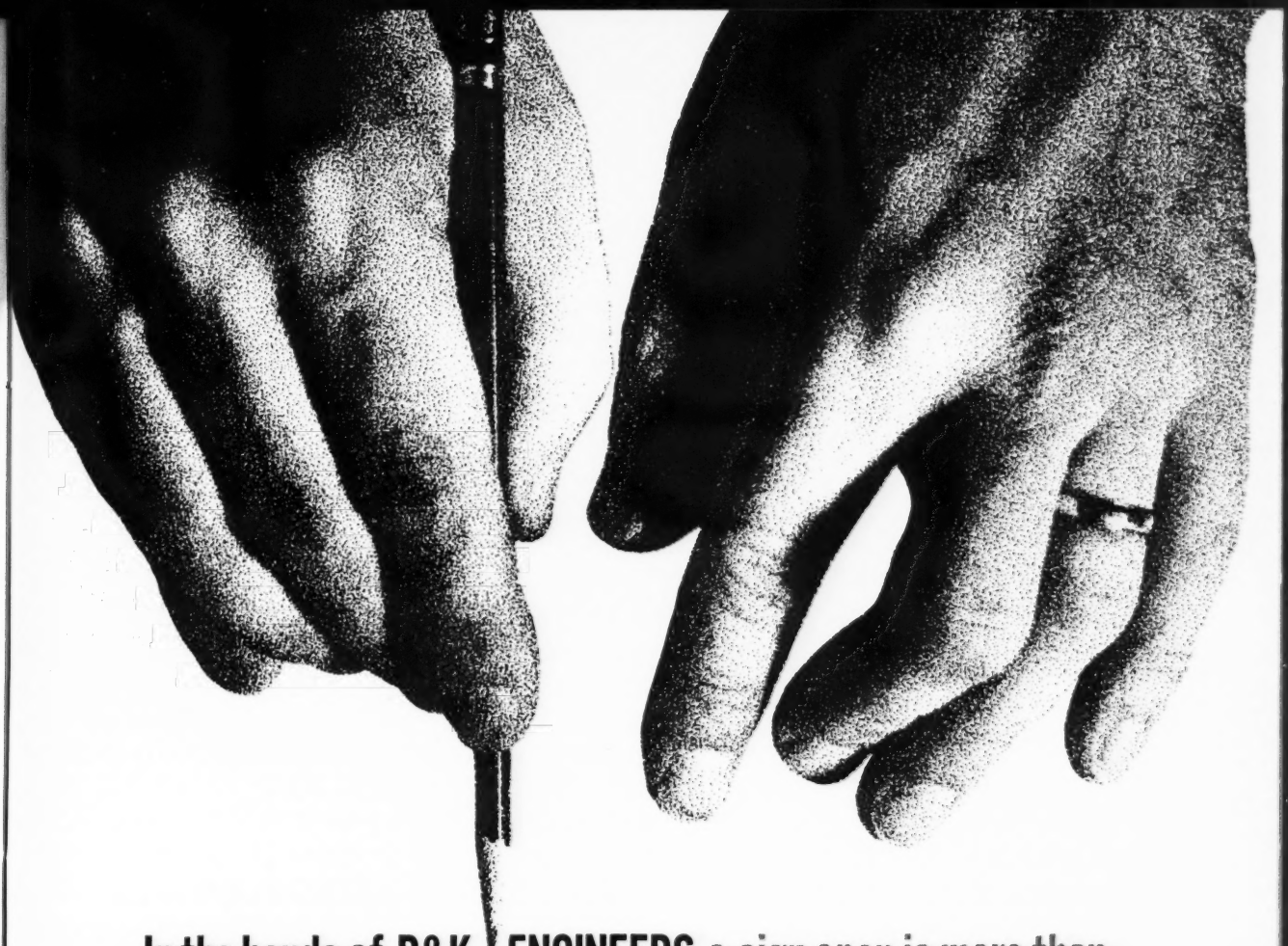
Numerous cities throughout the country have already installed Straitrays on their traffic lights, including Detroit; Long Beach, California; Portland, Oregon; Cincinnati, and Atlanta. Many state highway departments in the U. S. make use of Straitrays on their traffic lights.

An important advantage of the Straitray is the reduction of false indications caused by "sun phantom rays." The vertical fins prevent sun rays from reaching the signal lens at any point outside the angle of obscurity.

Another major feature is that the light beam, within the angle of obscurity or visibility cutoff, is in no way impaired. Because of its scientifically engineered principle, the Straitray ray director reduces glow to a desirable minimum, but does not reduce sight-distance characteristics. This is true in broad daylight, as well as in extreme darkness or under poor weather conditions.

Straitray ray directors are available in dimensions covering all standard signal heads, including the new 12-inch size. The various sizes come in four models, each of which provides

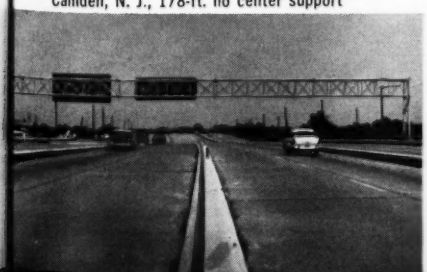




In the hands of P&K ENGINEERS a sign span is more than functional. It's as modern as your newest highway... reflecting not only your sound engineering judgment but your own good taste as well. Shown below are some of our recent installations. Our brochure BT-1 showing data on our 78 standard design P&K spans is yours on request. For spans...and signs...it's **P&K** PFAFF & KENDALL

84 Foundry St., Newark, N. J.

Camden, N. J., 178-ft. no center support



East Providence, R. I., new Expressway

North Carolina, Interstate Route 85

for a varying degree of cutoff from either side of the center axis of the light beam. These range from 10 1/2 degrees to 26 1/2 degrees.

In contrast to this, traffic lights without Straitray, using an 8-inch tunnel visor, have a 44-degree cutoff angle on either side of the center axis of the light beam. With a 12-inch tunnel visor, the cutoff angle is still 34 degrees.

The Straitray is manufactured of sheet aluminum. All aluminum parts are first corrugated in a die press so that the top and bottom bends at either end of each find will mesh perfectly with the corrugations on the inside of the tubular cover. All corrugations are 1/4-inch in width and 1/16-inch in depth, having flat sides which form sharp, serrated edges.

Additional information and a descriptive folder and price list are available from The Pam Company, 1951 N. W. Wilson Street, Portland 9, Oregon.

"Speedramp" Units Adopted

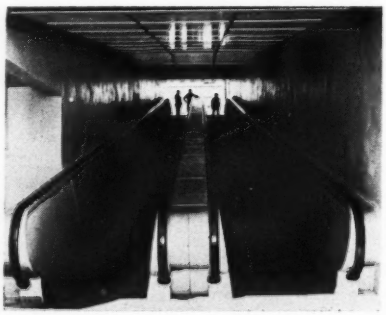
Shoppers in downtown Tacoma have found that steep hills separating major streets have flattened out considerably.

While the city's profile hasn't changed, hill climbing has been eased by four "Speedramp" units—moving sidewalks that carry shoppers and businessmen up and down the hills in comfort.

The moving sidewalks travel through special arcades created between Broadway and Commerce streets and Commerce and Pacific avenue. Moving at 90 feet per minute, grooved conveyor belts specially designed by Goodyear for maximum safety carry pedestrians up or down the 12-degree grade swiftly and effortlessly.

The four units in operation, and two additional pairs, are part of a $3.9 million revitalization program for Tacoma's downtown area. The additional units will provide two pairs of ramps between each set of streets later this year.

The Speedramps built by Stephens-Adamson Manufacturing Company of Aurora, Ill., have a grooved belt surface with "floating-comb" end plates that screen out foreign matter on the belts and avoid the danger of clothing or spiked heels being trapped at the end of the belt.

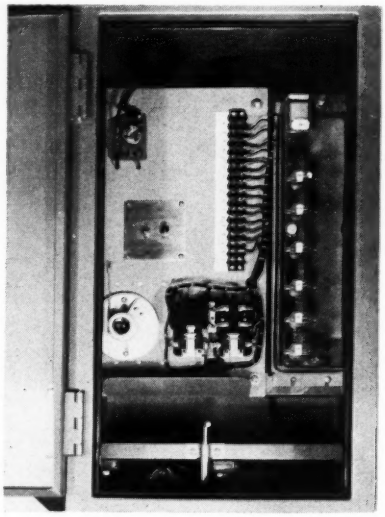


The Tacoma installations are the first on record where citizens of a community voted a bond issue to purchase moving sidewalk equipment.

For further information please write Howard Babcock, Manager, News Bureau, The Goodyear Tire & Rubber Co., Akron 16, Ohio.

New "Parkontrol" Gate

The parking field has long sought a "trouble free" gate and one which insures positive action when the demand is present.



The Globe Ticket Company, through Union Switch and Signal, a Division of Westinghouse Air Brake Company, has developed this "trouble-free" Parkontrol Gate. Uniquely included is a "Magic Brain" exclusive which permits universal control of all associated equipment. The "Magic Brain" is a compact transparent plastic enclosure of shuntless relays which utilizes static devices, thus eliminating wearing parts. This central control unit receives, stores and transmits electrical pulses to accomplish any phase of operation for parking systems.

In addition, the new "Parkontrol" gate features a heavy duty gearmotor with a one-third horsepower rating, a helical - worm gear reduction unit which eliminates a clutch or belt mechanism, dynamic braking for positive positioning of gate arm on subsequent cycles, and eliminates oil changes by using an all weather lubricant.

Write for further information to: Globe Ticket Company, 112 North Twelfth Street, Philadelphia 7, Pennsylvania.

Technical Council News

Review Committee Meets—Agrees on New "Short Form"

The Review Committee for the Technical Development and Research Fund met in June to discuss the proposals for financial aid which had been received up to the time of the meeting. Four proposals were considered, dealing with delay at signalized intersections, channelization for left turning vehicles, a traffic signal demonstration panel and a study of time-relating traffic signals through an urban area.

The Review Committee discussed each of the four proposals and forwarded their recommendations to the Technical Council. The Technical Council will now make its recommendations so that the Board of Direction can announce at the Annual Meeting those to whom grants will be made.

One of the items which concerned the Review Committee was the apparent lack of interest on the part of the vast majority of practicing traffic engineers. When the fund was established, it was thought that many people in this category would have an opportunity to develop material already in their files which would otherwise not be disseminated. An analysis of the situation revealed that one possible factor which is discouraging applicants is the present "form of request". It is felt some who may not be sure if a project will be acceptable prefer not to fill out an entire application.

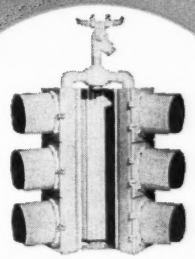
The "Short Form"

The suggestion made in the hope of overcoming some of the reticence to submit a proposal is to permit prospective applicants to submit a "short form." Actually, this would be a letter in which the applicant would give a brief description of his idea for a project. The description should include what is expected to be accomplished, how the project will be of value to the profession and who will participate with the applicant in the pursuit of the project. If the project has already been started, an indication should be given of its present status.

When preparing this "short form" letter, the applicant should also indicate his estimate of project cost—will it be below $500, between $500 and $2,500, or over $2,500? These letters should be directed to the Review Com-

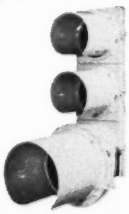
(Continued on page 52)

A Complete Line of Traffic Signals By ECONOLITE



Three way three section 8" Signal for Span Wire Mounting #3-E31G1G1A-4003A.

12" Signal Adapter, "Red Lens" shown installed on 8" Signal. Adapter Complete, #TA11GGA.

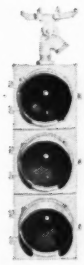


12" Signal Adapter, "Green Arrow" shown installed on 8" Signal. Adapter Complete, #TA14GGA.

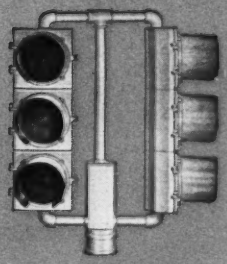
One way three section 12" signal with Elevator Plumbizer and Backplate #1-T31G2G2A-8002.

ADVANTAGES

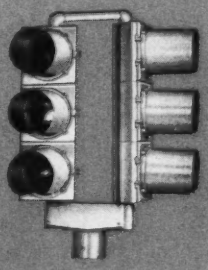
1. Complete assembly flexibility into rigid units.
2. Excellent signal indication and freedom from "sun phantom."
3. Maintenance ease, unsurpassed.
4. Shurlock fittings for positive alignment.
5. Precision die-cast interchangeable parts.



One way three section 8" Signal for Span Wire Mounting #1-E31G1G1A-4001A.



Two way three section 8" Signal for Post Top Mounting with Terminal Compartment #2-31G3GIA-3002.



Two way three section 8" Signal for Horizontal Post Top Mounting with Terminal Compartment #2-E31G3G1A-8005.

One way three section Combination Signal 12" Red 8" Amber and Green with Backplate for Adjustable Mast Arm Mounting #1-C36G1G2A-8011.

ECONOLITE CORPORATION

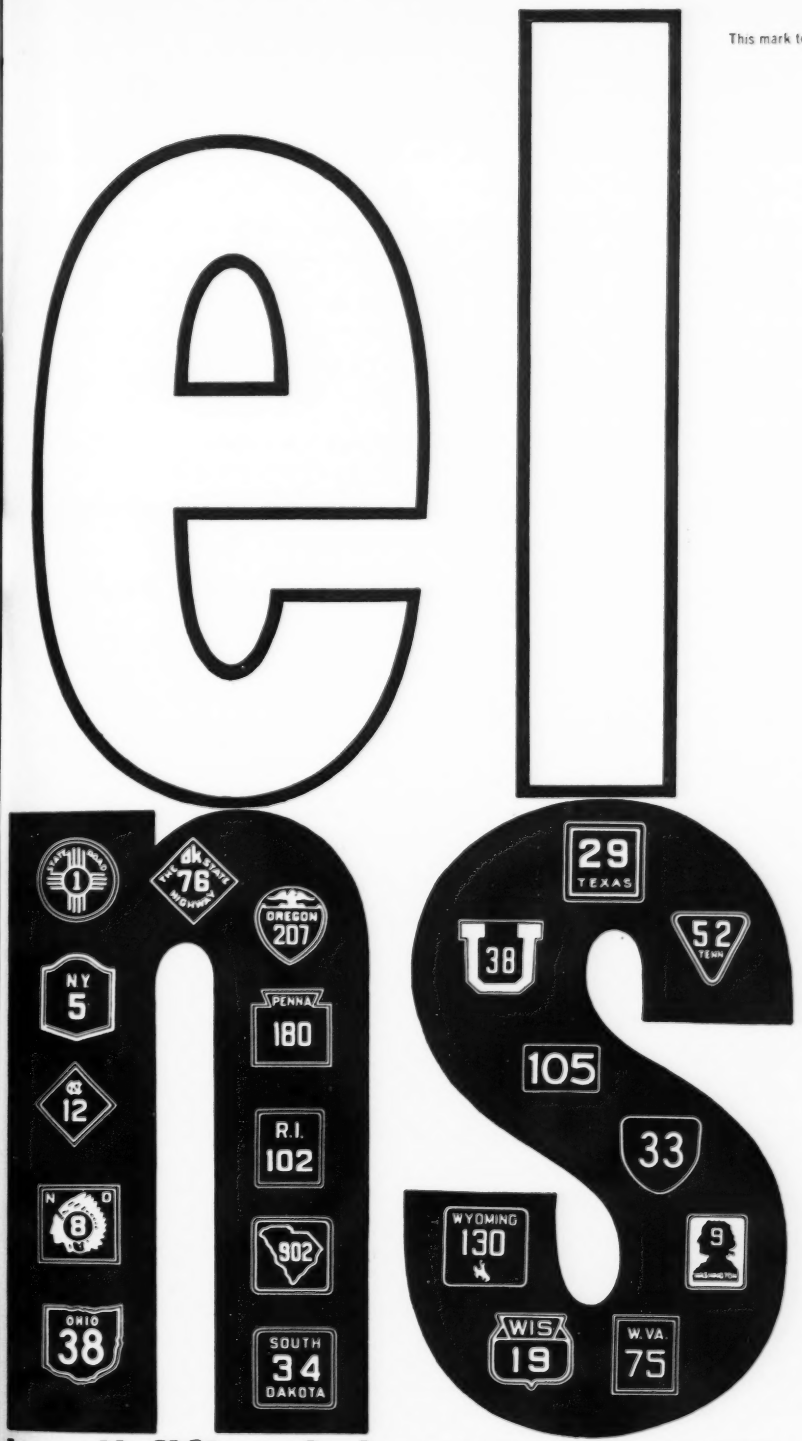
Write for further information...

ECONOLITE CORPORATION

Factory and General Offices
8900 Bellanca Ave., Los Angeles 45, Calif.

it's
GA. 12
for
ALASKA 40
STATE ROUTE 63
ALA 10
ARKANSAS 42
CALIFORNIA 166
COLORADO 83
FLORIDA 25
CONN 15
DEL 41
HAWAII 200
IDAHO 44
103
15
IOWA 188
ROUTE 6 MONTANA
MISSOURI 99
KANSAS 87
16
KY 40
NEVADA 4
LA 20
3
103
N J 25
2
28
19 WIS
M 39
MINNESOTA 23

This mark tells you a product is made of modern, dependable Steel.



in all fifty states

Traffic engineers in all fifty states know nothing can match steel's combination of strength, permanence and economy. That's why *steel* signs are used in every state. Steel signs on steel tubular posts offer the bonus of greater strength, wider choice of products: USS Galvanized, Vitrenamel, carbon cold rolled or extra-strong USS COR-TEN Steel sheets, which make possible lightweight construction with excellent atmospheric corrosion resistance and versatility. Economical steel signs of any of these products are available from manufacturers finished in the colors specified for the Interstate Highway System. Write U. S. Steel, 525 Wm. Penn Place, Pittsburgh 30, Pa. USS, COR-TEN and Vitrenamel are registered trademarks.

USS

United States Steel

TECHNICAL COUNCIL NOTES

(Continued from page 48)

mittee, TD&R Fund, c/o ITE headquarters in Washington.

When a letter is received at headquarters, it will be circulated to the Review Committee for an evaluation of whether or not the proposed project is one which would be considered for a grant. If this preliminary evaluation indicates that the project does have merit, the applicant will be asked to submit a complete application following the already established "Form of Request for Financial Aid". Copies of the later outline are available from headquarters.

When the complete application is received it will be handled in accordance with the processing procedure which has already been developed by the Review Committee.

New Committee to Study Traffic Engineering Potential

As a result of discussions at the Spring Meeting of the Technical Council, a new committee project has been approved for Department 2. This new committee will try to correlate the existing and "ideal" staffing patterns of various public and private agencies who employ traffic engineers with other commonly used indices in an effort to determine the potential size of the profession in 1985.

An up-to-date estimate of the potential demand for traffic engineers is a necessary tool to guide the activities of the ITE. The amount of emphasis on vocational guidance materials, headquarters office and staff requirements, and expected growth of ITE membership as a percentage of all traffic engineers are just a few of the many uses to which this estimate will be placed.

The specific title, objective and scope of the newly approved committee are as follows:

Committee No. 2F (61)

Title: Present and Future Need for Professional Traffic Engineering Personnel

Objective: To develop an estimate of the potential growth of the traffic engineering profession as a guide to those responsible for training and as a basis for future programs of the Institute of Traffic Engineers.

Scope: (1) To arrive at a reasonable estimate of the number of professional traffic engineers presently practicing in the United States and Canada and the present need for additional personnel and (2) to project these figures to an estimate of the potential size of profession in 1985.

Any member who is interested in working on the committee should contact the Department Head, Mr. C. C. Robinson, or the Headquarters Office.

Fall Meeting Set

The Fall Meeting of the Technical Council will take place at the start of the Annual Meeting. The Council is scheduled to meet starting at 2 p.m. Sunday afternoon. The location will be posted in the hotel.

Technical Council meetings are generally open, thus anyone wishing to sit in on the deliberations is welcome and invited. Items on the Agenda will include preliminary discussion of the 1962 technical program with the already appointed chairman, Adolf D. May, and a review of progress by committees completing their assignments.

Letter to the Editor

July 6, 1961

Sir:

Reference is made to Mr. Justin Farmer's article in the April issue on "Forecasting Travel Patterns". This article indicates an analysis which recognizes the value of relating trip production to land use and also of synthesizing the trip distribution. The use of trips or trip ends as the mass has resulted in reasonable answers in studies in Dayton, Cincinnati and Parkersburg, West Virginia. I would, however, like to comment on the use of the readily available and much misused squared term in the gravity formula. Walt Hansen in research work has shown this term to vary considerably depending on the type of trip under consideration. The writer has made extensive analysis on the magnitude of this power term when an all trip purpose model is considered and has tentatively determined that it varies considerably with the urban area size (population). It appears that to square the time of travel is incorrect except in the largest cities. Analysis of Cincinnati O-D data gives a value of 1.25, for Dayton 1.0+ and for Parkersburg 0.25 — 0.50. These exponents were computed with no allowance for terminal time as has been done in some of the research by Mr. Hansen. The allowance for terminal time was apparently not considered by Mr. Farmer so the figures cited are comparable with his work. I should like to state that the use of the squared term can cause considerable error in the trip distribution and therefore in the assignments. The higher the exponent the greater the distribution of shorter trips. This means that the trip lengths are understated and so the vehicle miles of travel in the area will be less than will actually occur.

This varying exponent is understandable. Small cities have limited residential areas which suit a particular family. Larger cities have multiple choices. If the exponent were zero, the trips would be distributed according to the destination mass. In small cities this is nearly true, i.e. Parkersburg. When the exponent is one, the trip distribution is directly proportional mass but inversely proportional to the travel times of the zones under consideration.

Looking at the problem in this context, it is easy to understand why the exponent for work trips is smaller than for shopping trips which are, in turn, smaller than the exponent for school trips. It is also then easily understood why the overall exponent and the individual exponent for particular trip purposes increase as the urban area size increases.

Very truly yours,
Robert S. Vogt,
Chief, Transportation and Highway Division,
Vogt, Ivers and Associates,
Cincinnati, Ohio.

Participating Organizations—1961

The following organizations have contributed to the Technical Development and Research Fund of the Institute of Traffic Engineers in 1961, and have therefore been designated by the Board of Direction as "Participating Organizations" as provided in Section 2 of Article XI of the By-Laws:

Aluminum Company of America
1501 Alcoa Building Pittsburgh 19, Pa.
R. G. St. John, Representative

American-Marietta Company
3400—13th Avenue S.W. Seattle 4, Wash.
Tom F. Kelly, Representative

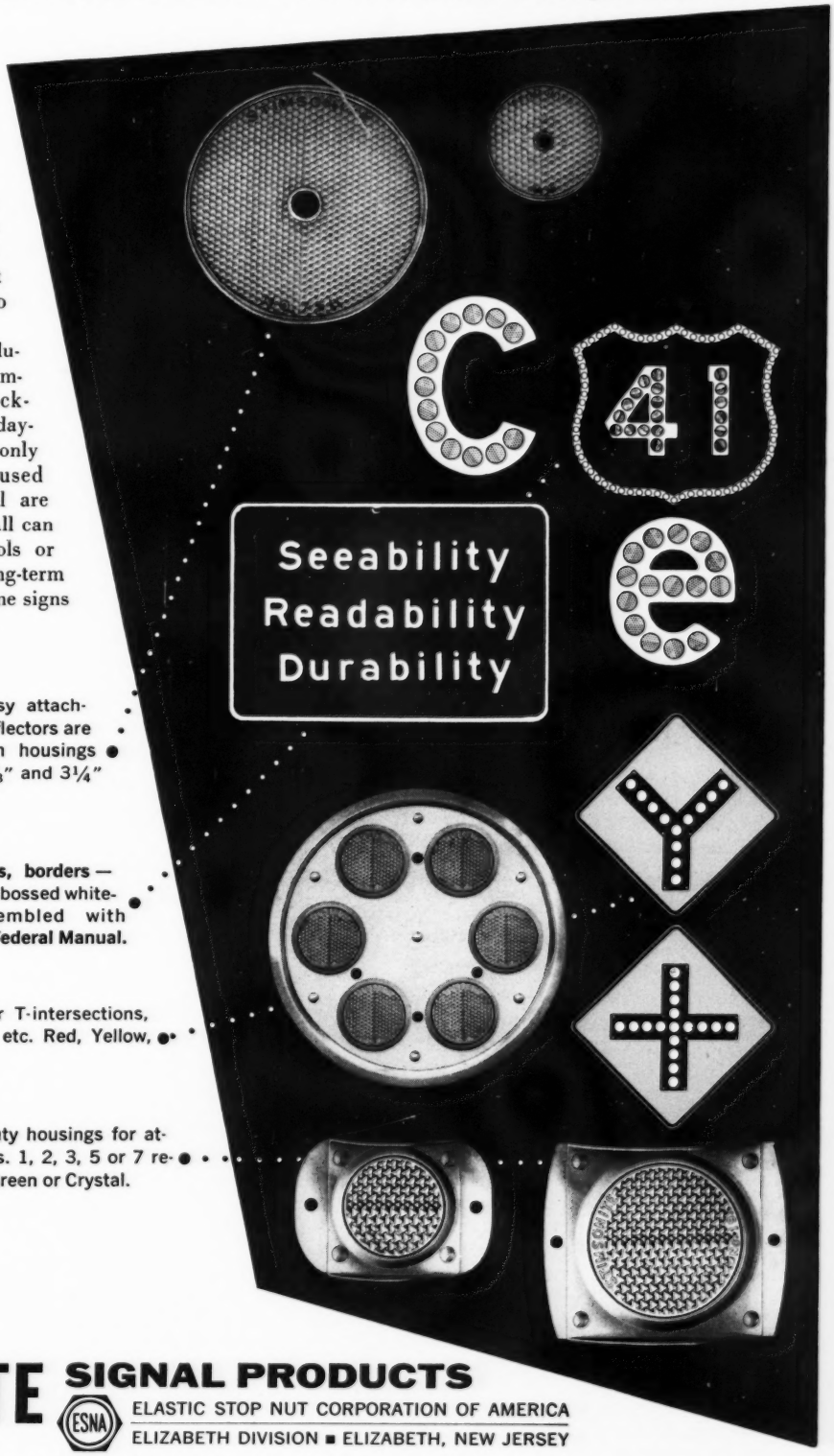
American Transit Association
355 Lexington Ave. New York 17, N. Y.
George W. Anderson, Representative

Standardize on STIMSONITE®

FOR EVERY SIGNING AND MARKING REQUIREMENT

Stimsonite sealed reflectors have greater visibility at night than any other reflectorized material because their unique design returns more of the light received from headlamps back to the driver.

And assembled in embossed aluminum letters, numerals and symbols against contrasting backgrounds they have maximum daylight visibility as well. Here are only a few of the most widely used Stimsonite signing devices. All are non-fading and weatherproof. All can be applied without special tools or fasteners. All will give you long-term efficiency and economy. Next time signs are in order—order Stimsonite.



Center-Mount Reflectors—for easy attachment to any flat surface. Acrylic reflectors are hermetically sealed in aluminum housings with grommeted center holes. 1⅜" and 3¼" dias. Crystal, Red, Yellow, Green.

Cutout letters, numbers, symbols, borders—alphabets from 4" to 24" tall, of embossed white-enameled aluminum preassembled with Stimsonite reflectors. Conform to **Federal Manual.**

Markers; clusters and arrows—for T-intersections, dead ends, center piers, islands, etc. Red, Yellow, Green or Crystal.

Delineators—mounted in heavy duty housings for attachment to steel or wooden posts. 1, 2, 3, 5 or 7 reflectors per housing. Red, Yellow, Green or Crystal.

STIMSONITE SIGNAL PRODUCTS

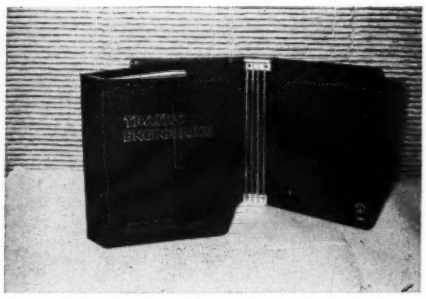
ESNA

ELASTIC STOP NUT CORPORATION OF AMERICA

ELIZABETH DIVISION ■ ELIZABETH, NEW JERSEY

IN CANADA: ESNA CANADA, LTD., 12 GOWER ST., TORONTO 16, ONTARIO, CANADA

Have You Ordered Yours?



A HANDY AND DISTINCTIVE BINDER FOR 12 ISSUES OF TRAFFIC ENGINEERING

Now you can build an easy reference library to the many fine articles and technical reports which appear in TRAFFIC ENGINEERING. Slip each monthly issue into this handsome new blue and gold binder. It holds up to twelve issues, and will make a most attractive addition to your office or home library.

The binder has been improved and now has twelve flat steel bars which are easily operated to put copies in (or to remove them if necessary). The binder is beautifully finished and has a reinforced stiff back which is lined for greater wear.

order yours today **$3.00** postpaid

TRAFFIC ENGINEERING 2029 K Street, NW, Washington 6, D.C.

Please send me ..... binders, postpaid.

I enclose $..... ☐ Bill me.

Name .....
Please Print

Address .....

City ..... Zone ..... State .....

Automatic Signal Division Eastern Industries, Inc.
Regent Street East Norwalk, Conn.
Paul L. Green, Representative

J. E. Bauer Company
1021 N. Mission Road Los Angeles 33, Calif.
Roy Meggison, Representative

Cataphote Corporation
2505 Albion St. Toledo 10, Ohio
C. E. Searight (P.O. Box 2066, Jackson, Miss.) Representative

The Clinton Company
1210 North Elston Ave. Chicago 22, Ill.
Richard H. Clinton, Representative

Crouse-Hinds Company
Wolf & Seventh North Streets, Syracuse 1, N.Y.
K. C. Eichelberg, Representative

Duncan Parking Meter Division of Nautec Corporation
835 North Wood Street Chicago 22, Ill.
R. J. Smott, Representative

Econolite Corporation
8900 Bellanca Ave. Los Angeles 45, Calif.
Aubrey Matthews, Representative

Flex-O-Lite Manufacturing Company
P.O. Box 3066 (Affton Br.) St. Louis 23, Mo.
Charles R. Dernbach, Representative

General Railway Signal Company Electronic Control Division
P.O. Box 600 Rochester 2, N. Y.
Jerome O'Neill, Representative

Kar-Trol Signal Company, Inc.
12739 South Main Houston 35, Texas
Jack Hulett, Representative

Magee-Hale Park-O-Meter Company
P.O. Box 7247 Oklahoma City 12, Okla.
Walter N. Howe, Jr., Representative

The Marbelite Company, Inc.
179 N. 10th St. Brooklyn 11, N. Y.
William E. Lenz, Representative

Minnesota Mining and Mfg. Co.
900 Bush Avenue St. Paul 6, Minnesota
Donald O. Opstad, Representative

Motorola Communications and Electronics, Inc.
4501 West Augusta Blvd. Chicago 51, Ill.
Stanley H. Burg, Representative

Outdoor Advertising Association of America, Inc.
24 W. Erie St. Chicago 10, Ill.
Don Martin, Representative

Pfaff & Kendall
84 Foundry Street Newark 5, N. J.
George C. Masefield, Representative

Prismo Safety Corporation
Huntingdon Pennsylvania
John C. Horn, Representative

Stimsonite Signal Products Elizabeth Division of ESNA
1027 Newark Ave. Elizabeth 3, N. J.
John F. Brady, Representative

Streeter-Amet Company
Grayslake Illinois
George F. Graham, Representative

The Union Metal Manufacturing Company
1432 Maple Ave., N.E. Canton 5, Ohio
K. C. Dorland, Representative

United States Steel Corporation
525 William Penn Place Pittsburgh 30, Pa.
Robert S. Holmes, Representative

Highway Research Board Notes

Effect of Pavement Edge Markings on Traffic—a paper by A. J. Basile, Kansas Highway Commission.

Reflective white guide lines painted on the edges of selected sections of rural Kansas highways have reduced highway deaths on those sections by 25 per cent and effected an overall reduction of 14.3 per cent in the accident rate.

Although edge lining was almost unknown ten years ago, it is now being given widespread use by many states. Some have placed the white edge lines on all major highways, and others have made steady use of the device on selected highways.

Kansas marked 453 miles of high-accident rural highway in 1957, and in 1958 conducted a "before and after" study.

The results showed a 21 per cent reduction in total accidents after edge lining, a 26.2 per cent reduction in the number of personal injuries, and a 59.4 per cent reduction in fatalities.

Most of the highways marked were two-lane, and 20 feet or wider.

Encouraged by the trial, but feeling a more comprehensive study was in order, the Kansas Highway Commission and the U. S. Bureau of Public Roads in 1959 set up a far more extensive research study on edge lining, to determine motor user benefits to be derived from the use of pavement edge markings.

This interim report deals with accident studies conducted on 29 pairs of study sections, totaling 384 miles of rural highway. The study period covers the first seven months of 1960, compared with the first seven months of 1959. It compares sections before and after edge marking, studies accident records on unmarked sections, goes into details of changes in accidents in daylight and at night, types of accidents, and the like.

Studies showed a 49 per cent decrease in the number of accidents at intersections and driveways after edge marking, while the unmarked sections showed a 22.2 per cent increase.

The unmarked sections, as nearly identical to the marked sections as possible, showed a 16.4 per cent greater increase in after-dark accidents than did the marked sections.

In the first seven months of 1959, 43 per cent of the fatalities occurred in the unmarked sections, and 57 per cent in the sections that were to be edge marked. During the corresponding period of 1960, 73 per cent of the fatalities occurred in the unmarked sections, and 27 per cent in the edge marked sections. This indicates a 30 per cent reduction of fatalities on the marked sections.

Edge lines are white, reflective lines, generally four inches in width, applied to the highways to delineate the edge of the pavement and the road shoulder. A recent study indicates that all but eight states are now employing the device, with North Carolina leading in miles of highway so marked (16,000 miles) and Ohio second, with over 8,500 miles edge lined. Kansas has marked approximately 1,450 miles.

Section News

TEXAS SECTION

The Texas Section held its semi-annual meeting in Fort Worth on June 3. In attendance were over 100 Section members, affiliates and wives. A full day of technical sessions was provided, as was a Section luncheon followed by a business meeting. A banquet the evening of the same day was a fitting climax to the meeting.

An unexpected prelude to the meeting took place the evening of June 2, when the hotel in which the meeting was to be held suffered a major fire. Although no serious injuries occurred, an estimated $100,000 damage was done to a meeting room on the fifth floor of the hotel. Many of the hotel guests were evacuated, reaching the street in various states of dress, since the fire started at midnight.

Al Malo, ITE President, receives from Bob Buckman, Fort Worth City Traffic Engineer, a certificate certifying that he is an honorary citizen of Fort Worth.

Pictured at the Fort Worth meeting of the Texas Section are (l. to r.): ITE Executive Secretary Dave Baldwin, ITE President Al Malo, and Texas Section President Joe Wright.

WASHINGTON (D. C.) SECTION PAST PRESIDENT'S COLUMN

by D. Grant Mickle

The local section is the foundation upon which a national organization is built. The national organization has difficulty in growing unless there is a strong foundation of local interest and support. Not until local sections were formed in the Institute did the organization experience strong and rapid growth.

The local section's contributions and values are many and varied. It is at the section level that prospective new members are discovered. Here technical men in related fields of work meet to discuss problems of mutual interest. New contacts are made and knowledge exchanged. New friendships are developed. The individual is benefited and the Institute has a potential new member. Nearly every new member admitted in the past dozen years very likely had his initial contact with the Institute of Traffic Engineers at a local section meeting.

Another important contribution of the section is in its selection of the Board of Directors of the national organization. The quality of the men proposed for District Directors is a heavy responsibility of the section, and it is through the personal knowledge of the local section members that worthy Directors are nominated.

As the national organization has grown in size it has become increasingly necessary to rely upon local sections to arrange and carry on the Annual Meetings. This is an important job of the section and requires the cooperation and effort of all its members.

HALL **EXTRUDED GEON PLASTIC MARKERS**

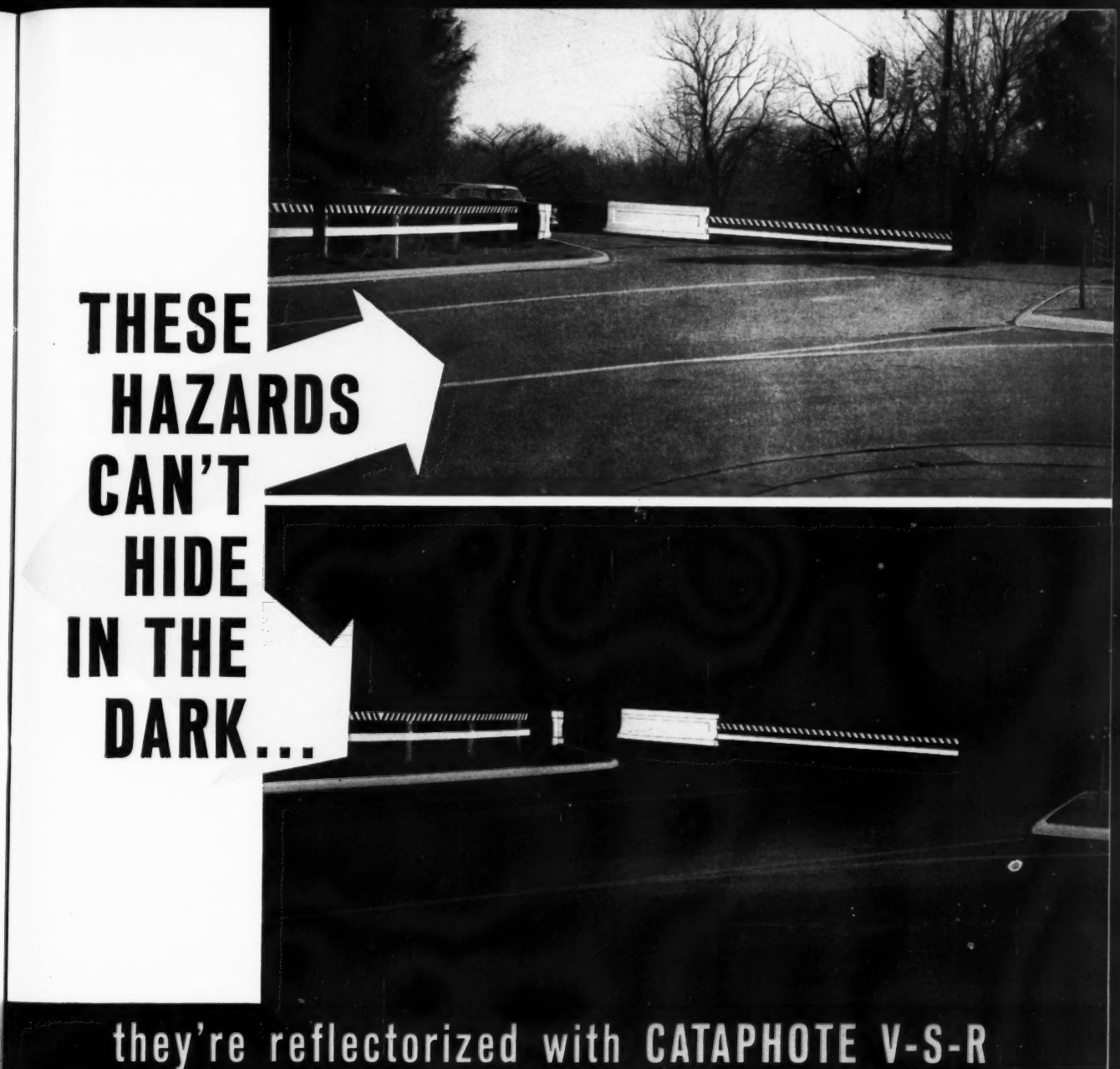
- **Traffic Proven**
- **Won't Crack or Chip in Any Weather**
- **Tough as Leather**
- **Easy to Apply with Quick-setting Mastic— *Applied Cold***
- **Brilliant White or Yellow**
- **Rectangles, Strips or Diamonds**
- **Not Rubber**
- **No Clay Content**
- **Thin (.070")**

WHY BE CRITICIZED BY YOUR CITY OFFICIALS? Buy a quality street marker proven over a 5-year period on streets and intersections throughout the United States.

REFLECT-O-MARKERS are available in strips, rectangles or diamonds and in brilliant white or traffic yellow . . . Ideal for cross walks, center lines, limit lines and many other traffic control applications. . . . Easily applied with cold quick-setting mastic. . . . Stays brilliant for years.

The quality and performance of each REFLECT-O-MARKER is guaranteed by bond. Write for brochure, samples and prices TODAY!

HALL **SIGN & POST INC.**
BLOOMINGTON, INDIANA



THESE HAZARDS CAN'T HIDE IN THE DARK...

they're reflectorized with CATAPHOTE V-S-R

Approach this Jackson, Mississippi intersection in daylight or darkness . . . you're instantly aware of the sharp delineation of curbs and traffic islands . . . barrier boards and bridge abutments. Bright by day . . . brilliant by night . . . these traffic hazards are *reflectorized* with Cataphote V-S-R . . . Vertical Surface Reflectorization.

Available in kit form, Cataphote V-S-R consists of specially formulated bead binder (white or yellow), automatic air operated applicator and Cataphote "101" extra high intensity glass spheres. Easily applied, V-S-R is one of the greatest aids you can provide the motoring public.

Men who lead the way in traffic control have been quick to recognize the safety values of Cataphote V-S-R . . . and use it extensively. V-S-R can help you be a pace setter, too. For more information, write for Catalog V-160.

CATAPHOTE CORPORATION

TOLEDO 10, OHIO / JACKSON, MISSISSIPPI

In Canada: CATAPHOTE/CANADA LTD. • P.O. Box 727 • Brantford, Ontario

MANUFACTURERS OF REFLECTIVE TRAFFIC PRODUCTS

But what value does the local section have for its members? It is here that the Institute gets closest to its members. Here is where all members become acquainted on a personal basis. Here the social and professional aspects of the organization can be combined. Here men working in the same or related fields in nearby communities can exchange views and ideas. Cooperation and coordination can often be developed on this meeting ground before official actions are undertaken. The Section provides the opportunity for undertaking studies, research and training on matters of mutual concern and interest. It provides an opportunity of more frequent contact with fellow traffic engineers than is possible with one annual National Meeting, and it allows those who cannot get to the Annual Meeting to have opportunity for technical discussions.

Let's keep the local section strong so the Institute will continue strong

By Joseph Tremblay

"Well, Harry, looks like we've finally solved the old problem of having to spend so much of our time giving motorists directions."

POSITIONS AVAILABLE

(Continued from page 42)

CONSULTANT
WASHINGTON, D. C.

Position open for ambitious young engineer for responsible position. Must have demonstrated ability in urban highway planning. Send experience statement and references to Roy E. Jorgensen, Roy Jorgensen and Associates, 7805 Old Georgetown Road, Washington 14, D. C.

SANTA MONICA, CALIFORNIA

Position: Executive Director, Santa Monica Parking Authority.

Requirements: College education with administrative experience in parking and/or traffic control. Should be wholly familiar with the analysis, land acquisition, development and operational aspects of off-street parking facilities.

Salary: Open.

Apply: Personnel Director, City Hall, 1685 Main St., Santa Monica, California.

EL PASO, TEXAS

Position: Assistant Traffic Engineer.

Requirements: Engineering degree from an accredited college or considerable experience and training in traffic engineering field.

Salary Range: $5808 to $6431.

Apply: Mr. Edgar Chew, Acting Personnel Director, City-County Building, El Paso, Texas.

PONTIAC, MICHIGAN

Position: City Traffic Engineer.

Requirements: Prefer college graduate with several years of traffic engineering experience in a city over 50,000 population.

Salary: Not stated.

Apply: Send complete resume to Director of Personnel, City Hall, 35 S. Parke St., Pontiac, Michigan.

COUNTY OF YORK, PA.

Position: County Traffic Engineer.

Requirements: Education and experience adequate to initiate traffic engineering program on regional basis for SMA city and county with population of 238,000.

Salary: Open.

Apply: Jesse Nalle, York County Planning Commission, 32 West King Street, York, Pennsylvania.

"One of the marks of a gentleman is his refusal to make an issue out of every difference of opinion."

—Arnold H. Glasow

MEMBERSHIP APPLICATIONS

The Institute of Traffic Engineers welcomes applicants from qualified traffic engineers, but does not desire as members persons who are unqualified. Listed below are the names of those from whom applications for membership or transfer in grade have been received since the last published list. Institute members are urged to review this as soon as possible and immediately inform the Executive Secretary's office if names of people are found who are known to be unqualified for ITE membership or transfer.

New Applications

APPEL, Clayton C.
City Traffic Engineer, Johnstown, Pennsylvania—for ASSOCIATE.

BASMADJIAN, Alvin George
Senior Assistant Traffic Engineer, Department of Streets & Traffic, City of Detroit, Michigan—for JUNIOR.

BERTOLINA, Charles James
Manager, Special Studies Branch, Highway Statistician—Research Section, Utah State Department of Highways, Salt Lake City, Utah—for ASSOCIATE.

ENGUSTIAN, Vartges
Traffic Engineer, Town of West Hartford, Connecticut—for JUNIOR.

ESKELIN, Arthur Urho
Traffic Engineer, City of Redwood City, California—for ASSOCIATE.

FULLER, Robert Lathrop
Highway Engineer, Meissner Engineers, Inc., Chicago, Illinois—for ASSOCIATE.

GLANCY, David Matthew
Engineer-Economist (P.E.VI), Bureau of Planning, Division of Planning & Programming, Ohio Department of Highways, Columbus, Ohio—for ASSOCIATE.

GODFREY, Albert L., Sr.
Engineering Aide III, Traffic Division, Maine State Highway Commission, Augusta, Maine—for JUNIOR.

GOODGION, Walter A.
Superintendent of Traffic Engineering, City of Lubbock, Texas—for ASSOCIATE.

HAMM, James Edward, Jr.
Planning Engineer, H. W. Lochner, Inc., Chicago, Illinois—for JUNIOR.

HIROKAWA, Yukichi
Assistant Chief of Investigation Section, Tokyo Expressway Corporation, Shibuya-ku, Tokyo, Japan—for ASSOCIATE.

KASTRUP, Gunnar Ejvin
Head of the Traffic Department, City of Odense, Denmark—for ASSOCIATE.

KNAPP, Charles F.
Assistant Traffic Engineer, State Highway Department, Montpelier, Vermont—for ASSOCIATE.

LUDLOW, Dennis William Sykes
Senior Engineer, A. D. Margison & Associates, Ltd., Toronto, Ontario, Canada—for ASSOCIATE.

SMITH, R. Gilman
Partner, W. C. Gilman & Company, New York, New York—for MEMBER.

YATES, Joseph Louis
Transportation Planner II, City Planning Commission, Cincinnati, Ohio—for JUNIOR.

ZEVIN, Israel
Highway Senior Engineer, Connecticut Highway Department, Wethersfield, Connecticut—for ASSOCIATE.

Applications for Transfer

BIDELL, William
Construction Engineer, Toronto District, Ontario Department of Highways, Downsview, Ontario, Canada—for ASSOCIATE.

COCHARO, Sam L.
Traffic & Planning Engineer, City of Pueblo, Colorado—for ASSOCIATE.

CORBETT, Bernard Augustus, Jr.
Assistant Traffic Engineer, City of Charlotte, North Carolina—for ASSOCIATE.

DeARMON, Charles Wuichet
Traffic Planning Engineering, City of Dayton, Ohio—for ASSOCIATE.

DOWNES, Donald Philip
Assistant Traffic Engineer, Department of Traffic & Parking, City of New Haven, Connecticut—for ASSOCIATE.

GEORGE, Earl Theodore, Jr.
Senior Geometric Design Engineer, Louisiana Department of Highways, Baton Rouge, Louisiana—for Associate.

HORINE, Harold Herbert
Engineer of Traffic Regulations—Field, State Highway Department of Indiana, Greenwood, Indiana—for ASSOCIATE.

INGOLD, Donald Patterson
City Traffic Engineer, Greensboro, North Carolina—for ASSOCIATE.

ISBELL, Frank Louis
District Highway Traffic Engineer, Virginia Department of Highways, Petersburg, Virginia—for ASSOCIATE.

KRUEPER, Harry Joseph, Jr.
Associate Engineer, Neste & Brudin, San Bernardino, California—for ASSOCIATE.

McNEIL, Robert A.
City Traffic Engineer, Peoria, Illinois—for ASSOCIATE.

PLINE, James Leonard
Associate Traffic Engineer, Class I, Idaho Department of Highways, Boise, Idaho—for ASSOCIATE.

TUTT, Paul R.
Supervising Designing Engineer, Texas Highway Department, Austin, Texas—for MEMBER.

YEARBOOK CHANGES

ABEND, Norman A. (Junior)
Planning and Traffic Engineer, The Planning Services Group, 18 Eliot Street, Cambridge 38, Massachusetts. UNiversity 8-7300.

AUDIFFEREN, Solomon B. (Associate)
Senior Executive Engineer, Highways Branch, Federal Ministry of Works & Surveys, Lagos, Nigeria.

BOULDING, Ernest A., Jr. (Junior)
Traffic Engineer, Bergen County, Administrative Building, Hackensack, New Jersey. DIamond 2-2200, ext. 60. SEND MAIL: 126 Belle Avenue, Maywood, New Jersey.

BRAUN, Wallace L. (Member)
Special Assistant to the Deputy Director of Traffic Engineering & Operations, D. C. Department of Highways & Traffic, District Bldg., 14th & E. Streets, N.W., Washington 4, D. C. NAtional 8-6000, ext. 2931.

BURNS, Harry F. (Member)
Deputy Director, Streets & Transit Division, Metropolitan Corporation of Greater Winnipeg, 10 Fort Street, Winnipeg 1, Manitoba, Canada. WHitehall 3-0441.

CLAIRE, William H. (Associate)
President, Pacific Urban Renewal Corporation, 1127 W. Washington Boulevard, Los Angeles 15, California. RIchmond 9-2781. SEND MAIL: 559 Esplanade, Redondo Beach, California.

CLARK, Neil B. (Junior)
Traffic Engineer, Western District, City, 1650 Purdue Avenue, Los Angeles 25, California. GRanite 7-4785, ext. 484. SEND MAIL: 2350 Pier Avenue, Santa Monica, California.

DEATON, Willis Robert (Junior)
Assistant Traffic Engineer, City, 600 E. Trade Street, Charlotte, North Carolina, 376-0731.

DEEN, Thomas B. (Associate)
Highway Engineer, National Capital Transportation Agency, 722 Jackson Place, Washington 25, D. C. DUdley 2-3450.

DRAKE, Gerard L. (Junior)
Principal Associate, Wilbur Smith & Associates, 2215 Devine Street, Columbia, South Carolina. ALpine 2-0364.

FINNBOGASON, W. H. (Associate)
Engineer of Streets & Traffic, Streets & Transit Division, Metropolitan Corporation of Greater Winnipeg, 10 Fort Street, Winnipeg 1, Manitoba, Canada. WHitehall 3-0441.

FISCHER, Stewart (Member)
Director of Traffic & Transportation, City, P. O. Box 9066. San Antonio 5, Texas. CApitol 5-5661, ext. 254.

FISHER, George J. (Member)
1612 North Happy Hollow Boulevard, Omaha 4, Nebraska.

FUJIMORI, Ken-ichi (Associate)
Chief of Highway Planning Department, Nihon Doro Kodan, No. 1, Shiba Minato-ku, Tokyo, Japan. (591) 1401.

GASSMAN, Lawrence (Junior)
Access Permit Engineer, Bureau of Traffic, Illinois Division of Highways, 160 North LaSalle Street, Chicago 1, Illinois. FInancial 6-2000, ext. 342. SEND MAIL: 6417 N. Damen Avenue, Chicago 45, Illinois.

GILLISS, C. M. "Max" (Affiliate)
Executive Director, Los Angeles Metropolitan Transit Authority, 1060 S. Broadway, Los Angeles, California. RIchmond 9-7211, ext. 422.

GUTHRIE, George P., Jr. (Junior)
Professional Engineer, Ohio Department of Highways, 450 E. Town Street, Columbus 15, Ohio. CApitol 8-5791. SEND MAIL: 2490 Bristol Road, Columbus 21, Ohio.

HANNA, John T. (Member)
Assistant Director of Public Safety, Department of Public Safety, City Hall Annex, 11th & Broad, Richmond 19, Virginia. MIlton 4-7611. SEND MAIL: 2100 Grove, Apartment 4, Richmond 20, VIrginia.

KOHN, Melvin J. (Associate)
Assistant to the Executive Director, New Jersey Highway Authority (Garden State Parkway), 12 Broad Street, Red Bank, New Jersey. SHadyside 1-4600. SEND MAIL: 4 Ash Street, Eatontown, New Jersey.

LONG, Richard R. (Associate)
Associate Traffic Engineer, Wilbur Smith & Associates, 2215 Devine Street, Columbia, South Carolina. ALpine 2-0364. SEND MAIL: Wilbur Smith & Associates, U.S.O.M., c/o American Embassy, Colombo, Ceylon.

McLAUGHLIN, Wallace A. (Junior)
Assistant Professor, Department of Civil Engineering, University of Waterloo, Waterloo, Ontario, Canada. SHerwood 3-2681.

McLEROY, Charles E., Jr. (Associate)
Traffic Engineer, City Hall, P. O. Box 1152, Midland, Texas. MUtual 4-6661, ext. 15.

MENKE, Fred H. (Associate)
Assistant Planning & Research Engineer, Region Two, U. S. Bureau of Public Roads, 74 W. Washington Street, Hagerstown, Maryland. REgent 3-5870. SEND MAIL: 1820 Fountain Head Road, Hagerstown, Maryland.

NOBLITT, Jack L. (Junior)
Assistant Traffic Engineer, Utah State Department of Highways, State Office Building, Salt Lake City, Utah. HUnter 4-4939. SEND MAIL: 2850 Dearborn Street, Salt Lake City, Utah.

(Continued on page 62)

Lancaster (Pa.) Traffic Engineer Einar Hansen Says:

Rockwell Twin-Duals are Tops!

Installed seven months ago during the worst winter in Lancaster's history, Rockwell Dual parking meters have functioned remarkably well, according to Traffic Engineer Einar Hansen. His latest tests, excluding foreign matter inserted into meters, show these meters operating at an average of 98.4% of efficiency. Mr. Hansen uses two methods in a continuous check of meter accuracy . . . a daily report of malfunctions and a monthly test with coins actually inserted into each meter. Dual automatic meters proved their dependability under the most severe weather conditions.

Many other cities are discovering the durability and efficiency of Dual parking meters. Stainless steel working parts resist wear and stop corrosion; tamper-proof design rejects paper clips and other foreign objects. Learn how the Twin-Dual method of street-marking can help you accommodate more cars, while keeping traffic flowing smoothly. Write for a free descriptive booklet to: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa.

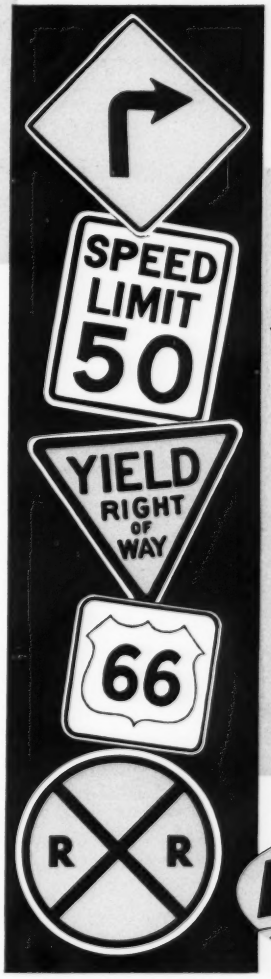
AUTOMATIC TWIN-DUAL MANUAL

DUAL PARKING METERS
another fine product by
ROCKWELL

Let it Rain . . .
Let it Pour . . .

FLEX-O-LITE REFLECTIVE TRAFFIC SIGNS "PERMANIZED" *with* STORMCOTE®

are CLEARER by DAY . . .
BRIGHTER by NIGHT!

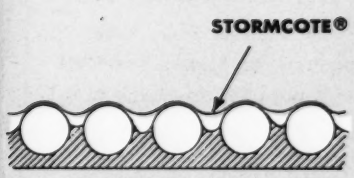


Now thanks to better research and engineering and a whole new concept of sign maintenance, you can have traffic signs and markers that afford unfailing day and night reflectivity under widely varying weather conditions.

Manufactured for outstanding service in the cause of safety, FLEX-O-LITE LEAD-FREE Sign Beads and Bead Binder, when applied as recommended and "permanized" with amazing new STORMCOTE® protective coating, offer improved reflectivity and message legibility at lowest cost.

Why not investigate the money-saving features made possible by the improved materials and application techniques in the FLEX-O-LITE system.

A trial order, subject to your own tests with our sign processing materials kit, will convince you. Wire, write or phone today.



Properly embedded in the binder, FLEX-O-LITE LEAD-FREE Beads, over which Stormcote® serves as a protective film, present an optically uniform surface to assure you of new highs in weather, water, dirt and wear-resistance—coupled with better day and night reflectivity.

FLEX-O-LITE

FLEX-O-LITE MANUFACTURING CORPORATION

8301 Flex-O-Lite Drive, St. Louis 23, Missouri • Paris, Texas
Flex-O-Lite of Canada, Ltd., P. O. Box 216, St. Thomas, Ontario, Canada

MAKERS OF DROP-ON, FREE-FLOWING, STANDARD, MILITARY, MOISTURE-PROOF, HIGH AND MEDIUM INDEX SIGN BEADS

Professional Service Directory

TRAFFIC TRANSPORTATION PARKING
EXPRESSWAYS AIRPORTS PUBLIC WORKS
Surveys — Reports — Design — Supervision

EDWARDS AND KELCEY
Engineers and Consultants
3 William Street, Newark 2, New Jersey
Boston Salt Lake City New York
Providence Minneapolis

LAWRENCE S. WATERBURY
CONSULTING ENGINEER
26 Broadway
New York 4, N. Y.
———
Bowling Green 9-9298

Traffic — Parking — Highways — Transit
Design Consulting — Financing Aids
City Planning — Urban Redevelopment
E. A. BARTON and ASSOCIATES
CONSULTANTS
Cleveland Transit Bldg., Cleveland 14, Ohio
Cherry 1-0600
San Francisco Baltimore Toronto
St. Louis

DE LEUW, CATHER & COMPANY
CONSULTING ENGINEERS
Public Transit — Subways
Traffic & Parking — Railroad Facilities
Expressways — Industrial Plants
Grade Separations — Municipal Works
Urban Renewal — Port Development
150 North Wacker Drive, Chicago 6
San Francisco New York Boston

TRAFFIC RESEARCH CORPORATION
TRANSPORTATION PLANNING FOR METROPOLITAN AREAS AND HIGHWAY SYSTEMS
Traffic Signal Systems — Origin and Destination Surveys
Expressway and Public Transit Assignments
Traffic Surveys — Economic and Distribution Studies — Traffic Simulations
10 Columbus Circle, New York 19, N. Y. **20 Spadina Road, Toronto 4, Canada**

YOUR CARD
COULD BE SET IN THIS SPACE
AT A VERY REASONABLE RATE
If interested, please write
INSTITUTE OF TRAFFIC ENGINEERS
2029 K Street NW, Washington 6, D. C.

ALAN M. VOORHEES & ASSOCIATES
Traffic Engineering — Parking Studies — Highway Planning
Improvement Programs — Community Planning
Consultants
1832 M Street, N. W. Washington 6, D. C.

YEARBOOK CHANGES (Continued from page 59)

OSTERHOUDT, Earle W. (Member)
1052 Farmington Avenue, West Hartford, Connecticut.

PETRILLO, Paul C. (Associate)
Traffic Engineer, Southeast Engineering Associates, 1821 N.E. 24th Street, Pompano Beach, Florida. WHitehall 1-9832. SEND MAIL: 969 S.W. 13th Place, Boca Raton, Florida.

PULLIAM, Kenneth (Junior)
Programmer-Analyst, General Electric Computer Department, 7401 Wisconsin Avenue, Bethesda 14, Maryland. OLiver 2-8101. SEND MAIL: 1001 E. Montgomery Ave., Apartment 708, Rockville, Maryland.

RAYMOND, W. L., Jr. (Associate)
Traffic Engineer, Gannett, Fleming, Corddry & Carpenter, 600 N. Second Street, Harrisburg, Pennsylvania. CEdar 8-0451. SEND MAIL: 1511 Chatham Road, Highland Park, Camp Hill, Pennsylvania.

ROYER, J. P., Jr. (Junior)
District Traffic Engineer, Virginia Department of Highways, Culpeper, Virginia. VAlley 5-8304, ext. 71.

RUDDEN, James B. (Associate)
Technical Staff, Surface Traffic Section, Thompson-Ramo-Wooldridge, Inc., 329 South Wood Street, Chicago, Illinois. SEaley 8-0816. SEND MAIL: 328 S. Wisconsin Avenue, Apartment 1-C, Oak Park, Illinois.

SCHMIDT, Robert E. (Member)
Assistant Western District Sales Manager, Automatic Signal Division, Eastern Industries, Inc., Regent Street, East Norwalk, Connecticut. SEND MAIL: 500 Via Gorrion, Palos Verdes Estates, California.

SIMON, William J. (Affiliate)
Safety Coordinator, National Highway Users Conference, Inc., 966 National Press Building, Washington 4, D. C. DIstrict 7-1180.

SINEMUS, Herman A. (Associate)
Traffic Engineer II, Division of Traffic Engineering, City, Phoenix, Arizona. ALpine 8-7313. SEND MAIL: 5612 W. Thomas Road, Phoenix 31, Arizona.

STOVER, Vergil G. (Junior)
Research Assistant, Joint Highway Research Project, Civil Engineering Building, Purdue University, Lafayette, Indiana. 92-2589.

WILLIAMS, Howard R. (Member)
Valuation Engineer, Union Pacific Railroad Company, 1416 Dodge Street, Omaha, Nebraska. JAckson 5822, ext. 753. SEND MAIL: 8730 Arbor Street, Omaha 24, Nebraska.

WILLIAMS, Leslie (Member)
President, Coordinated Planning Services, 933 Commercial Trust Building, 16 South Broad Street, Philadelphia 2, Pennsylvania. LOcust 3-9985. SEND MAIL: 8512 Stanton Avenue, Philadelphia 18, Pennsylvania.

INDEX TO ADVERTISERS

Automatic Signal Division of Eastern Industries	4
Cataphote Corporation	57
Douglas Fir Plywood Association	44 & 45
Duncan Parking Meter Company	10
Eagle Signal Company	9
Econolite Corporation	49
Flex-O-Lite Corporation	61
General Railway Signal Company	31
Hall Sign & Post Company	56 & 58
Magee-Hale Park-O-Meter Company	3
Marbelite Company	20
Minnesota Mining & Manufacturing Company	32 & 33
The Pam Company	37
Pfaff and Kendall	47
Radiator Specialty Company	22
B. G. Reilly Company	35
Rockwell Manufacturing Company (Dual)	60
Snowfast Line	2
Sno-Flake Products Company	25
Stimsonite Signal Devices—Elizabeth Division	53
Stimsonite Signal Devices—Chicago Division	8
Streeter-Amet Company	15
Time-O-Matic, Incorporated	40
Traffic Signals, Incorporated	6
Union Metal Manufacturing Company	38 & 39
United States Steel Corporation	50 & 51
Wald Industries, Incorporated	Back Cover

Professional Service Directory

TRAFFIC ENGINEERING HIGHWAY PLANNING

BRUCE CAMPBELL & ASSOCIATES
ENGINEERS

177 MILK STREET • BOSTON 9

PARKING AIRPORTS SHOPPING CENTERS

PARSONS, BRINCKERHOFF QUADE & DOUGLAS

Engineers

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic, Parking and Transportation Reports, Power, Industrial Buildings, Housing, Sewerage and Water Supply.

165 Broadway New York 6, N. Y.

CRAWFORD, MURPHY & TILLY

CONSULTING ENGINEERS

Traffic and Parking Studies
Complete Civil Engineering Services

755 So. Grand West Springfield, Ill.
Phone: 217-528-5619

HOWARD, NEEDLES TAMMEN & BERGENDOFF

Consulting Engineers
Traffic Analyses Transportation Studies
Parking
Express Highway Planning
Reports and Design Administrative Services
Foundations and Airports

1805 Grand Avenue
Kansas City 8, Missouri
New York Cleveland

HARDESTY & HANOVER

CONSULTING ENGINEERS

BRIDGES — Long Spans of All Types
Movable — Lift, Bascule & Swing
Hanover Skew Bascule
Grade Crossing Eliminations
Other Structures Foundations
Expressways and Thruways
Design — Supervision — Inspection
Valuation — Reports

101 Park Avenue New York 17, N. Y.

PALMER AND BAKER ENGINEERS, INC.

CONSULTING ENGINEERS — ARCHITECTS

Surveys — Reports — Design — Supervision — Consultation
Transportation and Traffic Problems Tunnels Bridges Highways Airports
Industrial Buildings Waterfront and Harbor Structures
Graving and Floating Dry Docks
Complete Soils, Materials and Chemical Laboratories

Mobile, Ala. New Orleans, La. Washington, D.C.

S. Herbert Taylor Frank J. Sleeper
David L. Taylor William H. Taylor

SHERMAN, TAYLOR & SLEEPER

CONSULTING ENGINEERS
(All phases of Civil Engineering)

501 Cooper Street, Camden 2, N. J.
WOodlawn 6-2552

Park & Norwood Aves., Merchantville 8, N.J.
NOrmandy 3-4848

GANNETT FLEMING CORDDRY and CARPENTER, INC.

---ENGINEERS---

CONSULTING SERVICE FOR TRAFFIC PARKING and TRANSPORTATION PROBLEMS
City Planning — Highways — Bridges — Flood Control
Water Supply — Sewerage — Industrial Waste — Garbage Disposal
Appraisals — Investigations — Management

600 NO. 2nd STREET HARRISBURG, PA.
Pittsburgh, Pa. Philadelphia, Pa. Daytona Beach, Fla. Medelin, Colombia, S.A.

JENKINS, MERCHANT & NANKIVIL

CONSULTING ENGINEERS

Municipal Improvements Gas Systems
Highways & Airports Water Systems
Power Development Sewerage Systems
Traffic Surveys Industrial Plants
Flood Control Recreational Facilities
Investigations and Reports

801-805 East Miller St. Springfield, Ill.

BARTON-ASCHMAN ASSOCIATES, INC.

Engineering and Planning Consultants

- Comprehensive Traffic and Transportation Planning
- Detailed Traffic and Signal Improvement Studies
- Parking Programs and Feasibility Analyses

600 Davis Street Evanston, Illinois

RAMP CONSULTING SERVICES, INC.

Parking Programs • Feasibility Studies

RAMP ENGINEERING ASSOCIATES

Engineering and Design Services

2 West 46th Street, New York 36, N. Y.

TIPPETTS — ABBETT McCARTHY — STRATTON

Engineers
Traffic, Parking and Transportation

Surveys, Economic Studies and Financial Reports

Highways, Subways, Bridges Tunnels — Airports, Ports, Harbors, Power Developments, Water Supply, Sewerage

Planning, Reports, Design, Supervision of Construction

375 Park Avenue 110 Market St.
New York 22, N. Y. San Francisco, Calif.

Highways Transit
Traffic Parking

WILBUR SMITH & ASSOCIATES

495 Orange Street
New Haven, Connecticut

Columbia • San Francisco • Richmond
S. C. Calif. Va.

HIGHWAY TRAFFIC ENGINEERS, INC.

Traffic - Parking - Transportation
Economic Studies - Financial Reports
Traffic Control - Design of Lighting Systems and Communications

361 Boylston Street
Brookline 46, Massachusetts
LOngwood 6-0275

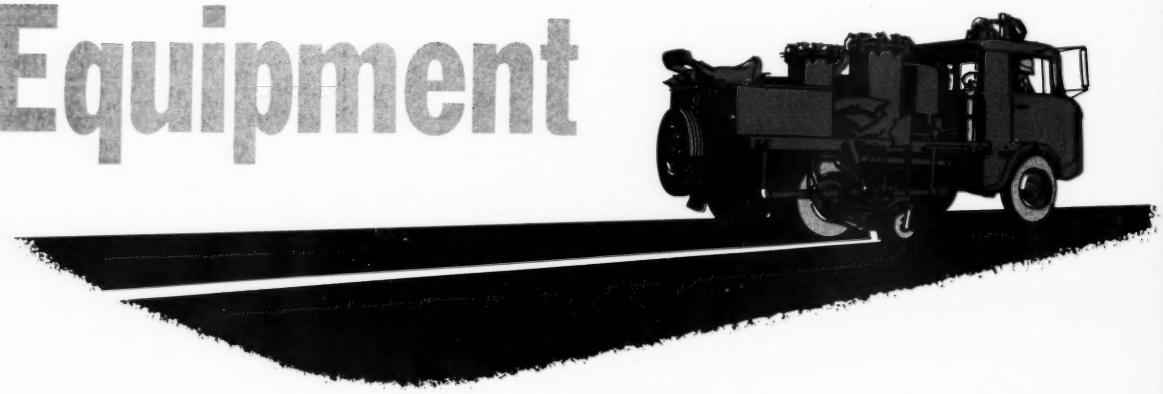
ALFRED KAEHRLE ASSOCIATES

CONSULTING ENGINEERS

Highway Planning — Highway Design
Traffic Engineering Surveys
Parking Studies — Shopping Centers

10 North Main Street
West Hartford 7 Connecticut

Creator of the World's Most Advanced Striping Equipment



"FIRSTS" BY WALD

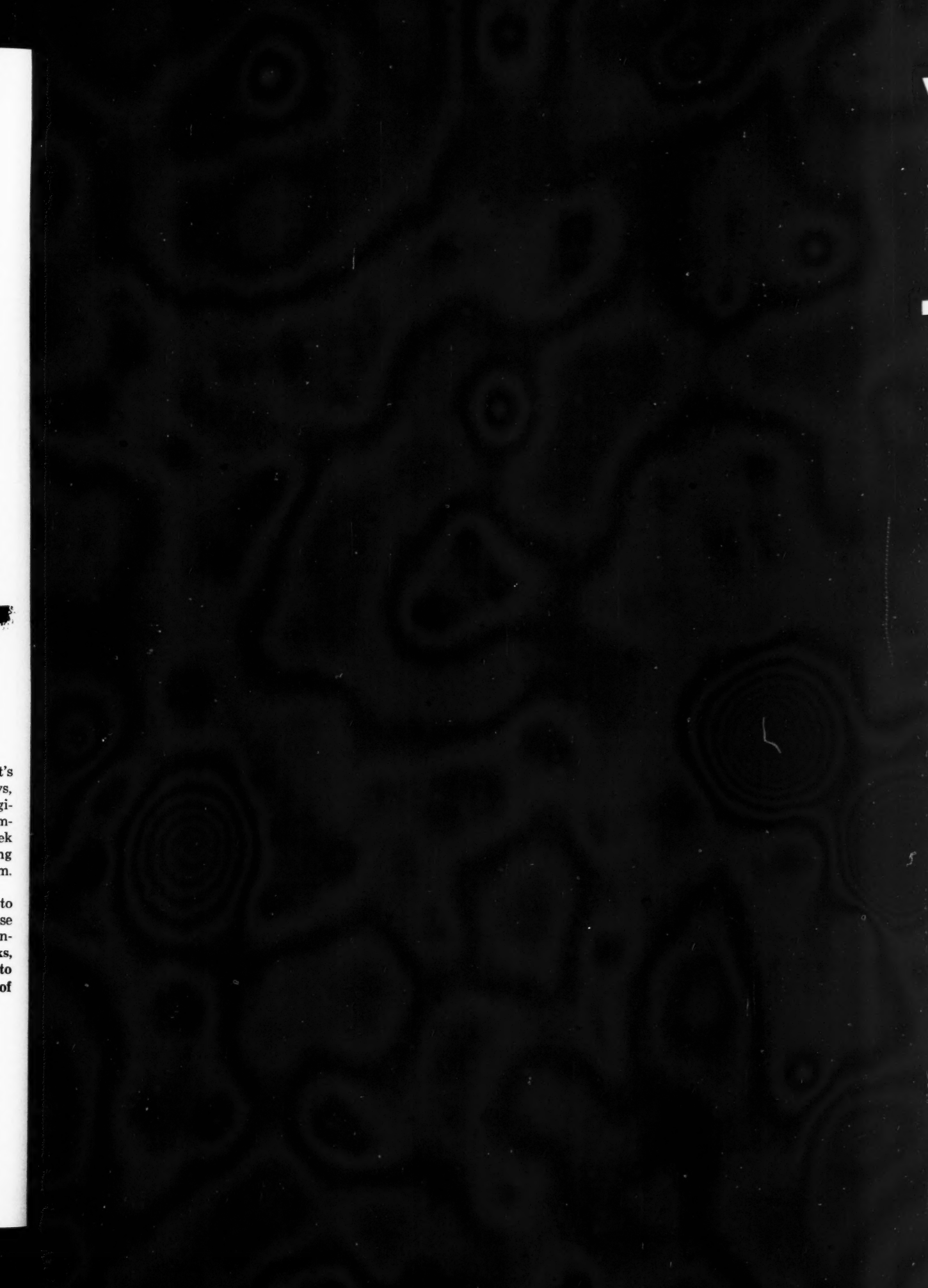
- "Push Button" striper on jeep chassis
- Numasphere system for drop-in reflective process
- Telescopic Edgeline Attachments
- Paintemp Heater
- Push button gun cleaner
- Panel mounted controls
- Tandem Tanker
- Enlarged engine and compressor to supply sufficient air
- Rigidized channel frame construction
- Spherical shape glass bead container
- Standard unitized striping machines with all automatic controls
- Airport striper . . . 3 feet wide stripe
- Power steering on trailer type units
- Automatic Skipline with continuous advance and retard features
- Automatic pattern selector on skipline mechanism
- Vertically adjustable paint line shroud
- Optical Guidance System
- Cadmium plated nuts, bolts and fittings
- Even-keel, tilt-bed Transport Trailer

At Wald, research is a major project. But that's how we find better ways of striping highways, streets, airports and industrial areas. Wald engineers and fellow-experts have touched off a number of revolutions in striping equipment. We seek and study, we build and test, with one consuming ambition . . . to ease the highway safety problem. It is no accident that Wald leads the field.

Wald accomplishments owe a great deal to the many state and municipal customers whose foresight and suggestions sparked some of our finest developments. **Herewith our warmest thanks, with firm assurances that Wald will continue to do its best to fulfill requirements, regardless of how exacting.**

Send for catalog W-58

WALD INDUSTRIES

WALD INDUSTRIES, INC.

HUNTINGDON, PENNSYLVANIA